

ASMi-52

2/4-Wire SHDSL Modem

Version 2.8



data communications

The Access Company

ASMi-52

2/4-Wire SHDSL Modem

Version 2.8

Installation and Operation Manual

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For further information contact RAD at the address below or contact your local distributor.

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RAD warrants to DISTRIBUTOR that the hardware in the ASMi-52 to be delivered hereunder shall be free of defects in material and workmanship under normal use and service for a period of twelve (12) months following the date of shipment to DISTRIBUTOR.

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This Agreement shall be construed and governed in accordance with the laws of the State of Israel.

Product Disposal



To facilitate the reuse, recycling and other forms of recovery of waste equipment in protecting the environment, the owner of this RAD product is required to refrain from disposing of this product as unsorted municipal waste at the end of its life cycle. Upon termination of the unit's use, customers should provide for its collection for reuse, recycling or other form of environmentally conscientious disposal.

General Safety Instructions

The following instructions serve as a general guide for the safe installation and operation of telecommunications products. Additional instructions, if applicable, are included inside the manual.

Safety Symbols



Warning

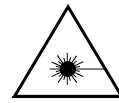
This symbol may appear on the equipment or in the text. It indicates potential safety hazards regarding product operation or maintenance to operator or service personnel.



Danger of electric shock! Avoid any contact with the marked surface while the product is energized or connected to outdoor telecommunication lines.



Protective ground: the marked lug or terminal should be connected to the building protective ground bus.



Warning

Some products may be equipped with a laser diode. In such cases, a label with the laser class and other warnings as applicable will be attached near the optical transmitter. The laser warning symbol may be also attached.

Please observe the following precautions:

- Before turning on the equipment, make sure that the fiber optic cable is intact and is connected to the transmitter.
- Do not attempt to adjust the laser drive current.
- Do not use broken or unterminated fiber-optic cables/connectors or look straight at the laser beam.
- The use of optical devices with the equipment will increase eye hazard.
- Use of controls, adjustments or performing procedures other than those specified herein, may result in hazardous radiation exposure.

ATTENTION: The laser beam may be invisible!

In some cases, the users may insert their own SFP laser transceivers into the product. Users are alerted that RAD cannot be held responsible for any damage that may result if non-compliant transceivers are used. In particular, users are warned to use only agency approved products that comply with the local laser safety regulations for Class 1 laser products.

Always observe standard safety precautions during installation, operation and maintenance of this product. Only qualified and authorized service personnel should carry out adjustment, maintenance or repairs to this product. No installation, adjustment, maintenance or repairs should be performed by either the operator or the user.

Handling Energized Products

General Safety Practices

Do not touch or tamper with the power supply when the power cord is connected. Line voltages may be present inside certain products even when the power switch (if installed) is in the OFF position or a fuse is blown. For DC-powered products, although the voltages levels are usually not hazardous, energy hazards may still exist.

Before working on equipment connected to power lines or telecommunication lines, remove jewelry or any other metallic object that may come into contact with energized parts.

Unless otherwise specified, all products are intended to be grounded during normal use. Grounding is provided by connecting the mains plug to a wall socket with a protective ground terminal. If a ground lug is provided on the product, it should be connected to the protective ground at all times, by a wire with a diameter of 18 AWG or wider. Rack-mounted equipment should be mounted only in grounded racks and cabinets.

Always make the ground connection first and disconnect it last. Do not connect telecommunication cables to ungrounded equipment. Make sure that all other cables are disconnected before disconnecting the ground.

Connecting AC Mains

Make sure that the electrical installation complies with local codes.

Always connect the AC plug to a wall socket with a protective ground.

The maximum permissible current capability of the branch distribution circuit that supplies power to the product is 16A. The circuit breaker in the building installation should have high breaking capacity and must operate at short-circuit current exceeding 35A.

Always connect the power cord first to the equipment and then to the wall socket. If a power switch is provided in the equipment, set it to the OFF position. If the power cord cannot be readily disconnected in case of emergency, make sure that a readily accessible circuit breaker or emergency switch is installed in the building installation.

In cases when the power distribution system is IT type, the switch must disconnect both poles simultaneously.

Connecting DC Power

Unless otherwise specified in the manual, the DC input to the equipment is floating in reference to the ground. Any single pole can be externally grounded.

Due to the high current capability of DC power systems, care should be taken when connecting the DC supply to avoid short-circuits and fire hazards.

DC units should be installed in a restricted access area, i.e. an area where access is authorized only to qualified service and maintenance personnel.

Make sure that the DC power supply is electrically isolated from any AC source and that the installation complies with the local codes.

The maximum permissible current capability of the branch distribution circuit that supplies power to the product is 16A. The circuit breaker in the building installation should have high breaking capacity and must operate at short-circuit current exceeding 35A.

Before connecting the DC supply wires, ensure that power is removed from the DC circuit. Locate the circuit breaker of the panel board that services the equipment and switch it to the OFF position. When connecting the DC supply wires, first connect the ground wire to the corresponding terminal, then the positive pole and last the negative pole. Switch the circuit breaker back to the ON position.

A readily accessible disconnect device that is suitably rated and approved should be incorporated in the building installation.

If the DC power supply is floating, the switch must disconnect both poles simultaneously.

Connecting Data and Telecommunications Cables

Data and telecommunication interfaces are classified according to their safety status.

The following table lists the status of several standard interfaces. If the status of a given port differs from the standard one, a notice will be given in the manual.

Ports	Safety Status
V.11, V.28, V.35, V.36, RS-530, X.21, 10 BaseT, 100 BaseT, Unbalanced E1, E2, E3, STM, DS-2, DS-3, S-Interface ISDN, Analog voice E&M	SELV Safety Extra Low Voltage: Ports which do not present a safety hazard. Usually up to 30 VAC or 60 VDC.
xDSL (without feeding voltage), Balanced E1, T1, Sub E1/T1	TNV-1 Telecommunication Network Voltage-1: Ports whose normal operating voltage is within the limits of SELV, on which overvoltages from telecommunications networks are possible.
FXS (Foreign Exchange Subscriber)	TNV-2 Telecommunication Network Voltage-2: Ports whose normal operating voltage exceeds the limits of SELV (usually up to 120 VDC or telephone ringing voltages), on which overvoltages from telecommunication networks are not possible. These ports are not permitted to be directly connected to external telephone and data lines.
FXO (Foreign Exchange Office), xDSL (with feeding voltage), U-Interface ISDN	TNV-3 Telecommunication Network Voltage-3: Ports whose normal operating voltage exceeds the limits of SELV (usually up to 120 VDC or telephone ringing voltages), on which overvoltages from telecommunication networks are possible.

Always connect a given port to a port of the same safety status. If in doubt, seek the assistance of a qualified safety engineer.

Always make sure that the equipment is grounded before connecting telecommunication cables. Do not disconnect the ground connection before disconnecting all telecommunications cables.

Some SELV and non-SELV circuits use the same connectors. Use caution when connecting cables. Extra caution should be exercised during thunderstorms.

When using shielded or coaxial cables, verify that there is a good ground connection at both ends. The grounding and bonding of the ground connections should comply with the local codes.

The telecommunication wiring in the building may be damaged or present a fire hazard in case of contact between exposed external wires and the AC power lines. In order to reduce the risk,

there are restrictions on the diameter of wires in the telecom cables, between the equipment and the mating connectors.

Caution	To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cords.
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Attention	Pour réduire les risques d'incendie, utiliser seulement des conducteurs de télécommunications 26 AWG ou de section supérieure.
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Some ports are suitable for connection to intra-building or non-exposed wiring or cabling only. In such cases, a notice will be given in the installation instructions.

Do not attempt to tamper with any carrier-provided equipment or connection hardware.

Electromagnetic Compatibility (EMC)

The equipment is designed and approved to comply with the electromagnetic regulations of major regulatory bodies. The following instructions may enhance the performance of the equipment and will provide better protection against excessive emission and better immunity against disturbances.

A good ground connection is essential. When installing the equipment in a rack, make sure to remove all traces of paint from the mounting points. Use suitable lock-washers and torque. If an external grounding lug is provided, connect it to the ground bus using braided wire as short as possible.

The equipment is designed to comply with EMC requirements when connecting it with unshielded twisted pair (UTP) cables. However, the use of shielded wires is always recommended, especially for high-rate data. In some cases, when unshielded wires are used, ferrite cores should be installed on certain cables. In such cases, special instructions are provided in the manual.

Disconnect all wires which are not in permanent use, such as cables used for one-time configuration.

The compliance of the equipment with the regulations for conducted emission on the data lines is dependent on the cable quality. The emission is tested for UTP with 80 dB longitudinal conversion loss (LCL).

Unless otherwise specified or described in the manual, TNV-1 and TNV-3 ports provide secondary protection against surges on the data lines. Primary protectors should be provided in the building installation.

The equipment is designed to provide adequate protection against electro-static discharge (ESD). However, it is good working practice to use caution when connecting cables terminated with plastic connectors (without a grounded metal hood, such as flat cables) to sensitive data lines. Before connecting such cables, discharge yourself by touching ground or wear an ESD preventive wrist strap.

FCC-15 User Information

This equipment has been tested and found to comply with the limits of the Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the Installation and Operation manual, may cause harmful interference to the radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Canadian Emission Requirements

This Class A digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment Regulation.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Warning per EN 55022 (CISPR-22)

Warning

This is a class A product. In a domestic environment, this product may cause radio interference, in which case the user will be required to take adequate measures.

Avertissement

Cet appareil est un appareil de Classe A. Dans un environnement résidentiel, cet appareil peut provoquer des brouillages radioélectriques. Dans ces cas, il peut être demandé à l'utilisateur de prendre les mesures appropriées.

Achtung

Das vorliegende Gerät fällt unter die Funkstörgrenzwertklasse A. In Wohngebieten können beim Betrieb dieses Gerätes Rundfunkstörungen auftreten, für deren Behebung der Benutzer verantwortlich ist.

Mise au rebut du produit



Afin de faciliter la réutilisation, le recyclage ainsi que d'autres formes de récupération d'équipement mis au rebut dans le cadre de la protection de l'environnement, il est demandé au propriétaire de ce produit RAD de ne pas mettre ce dernier au rebut en tant que déchet municipal non trié, une fois que le produit est arrivé en fin de cycle de vie. Le client devrait proposer des solutions de réutilisation, de recyclage ou toute autre forme de mise au rebut de cette unité dans un esprit de protection de l'environnement, lorsqu'il aura fini de l'utiliser.

Instructions générales de sécurité

Les instructions suivantes servent de guide général d'installation et d'opération sécurisées des produits de télécommunications. Des instructions supplémentaires sont éventuellement indiquées dans le manuel.

Symboles de sécurité



Avertissement

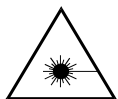
Ce symbole peut apparaître sur l'équipement ou dans le texte. Il indique des risques potentiels de sécurité pour l'opérateur ou le personnel de service, quant à l'opération du produit ou à sa maintenance.



Danger de choc électrique ! Evitez tout contact avec la surface marquée tant que le produit est sous tension ou connecté à des lignes externes de télécommunications.



Mise à la terre de protection : la cosse ou la borne marquée devrait être connectée à la prise de terre de protection du bâtiment.



Avertissement

Certains produits peuvent être équipés d'une diode laser. Dans de tels cas, une étiquette indiquant la classe laser ainsi que d'autres avertissements, le cas échéant, sera jointe près du transmetteur optique. Le symbole d'avertissement laser peut aussi être joint.

Veuillez observer les précautions suivantes :

- Avant la mise en marche de l'équipement, assurez-vous que le câble de fibre optique est intact et qu'il est connecté au transmetteur.
- Ne tentez pas d'ajuster le courant de la commande laser.
- N'utilisez pas des câbles ou connecteurs de fibre optique cassés ou sans terminaison et n'observez pas directement un rayon laser.
- L'usage de périphériques optiques avec l'équipement augmentera le risque pour les yeux.
- L'usage de contrôles, ajustages ou procédures autres que celles spécifiées ici pourrait résulter en une dangereuse exposition aux radiations.

ATTENTION : Le rayon laser peut être invisible !

Les utilisateurs pourront, dans certains cas, insérer leurs propres émetteurs-récepteurs Laser SFP dans le produit. Les utilisateurs sont avertis que RAD ne pourra pas être tenue responsable de tout dommage pouvant résulter de l'utilisation d'émetteurs-récepteurs non conformes. Plus particulièrement, les utilisateurs sont avertis de n'utiliser que des produits approuvés par l'agence et conformes à la réglementation locale de sécurité laser pour les produits laser de classe 1.

Respectez toujours les précautions standards de sécurité durant l'installation, l'opération et la maintenance de ce produit. Seul le personnel de service qualifié et autorisé devrait effectuer l'ajustage, la maintenance ou les réparations de ce produit. Aucune opération d'installation, d'ajustage, de maintenance ou de réparation ne devrait être effectuée par l'opérateur ou l'utilisateur.

Manipuler des produits sous tension

Règles générales de sécurité

Ne pas toucher ou altérer l'alimentation en courant lorsque le câble d'alimentation est branché. Des tensions de lignes peuvent être présentes dans certains produits, même lorsque le commutateur (s'il est installé) est en position OFF ou si le fusible est rompu. Pour les produits alimentés par CC, les niveaux de tension ne sont généralement pas dangereux mais des risques de courant peuvent toujours exister.

Avant de travailler sur un équipement connecté aux lignes de tension ou de télécommunications, retirez vos bijoux ou tout autre objet métallique pouvant venir en contact avec les pièces sous tension.

Sauf s'il en est autrement indiqué, tous les produits sont destinés à être mis à la terre durant l'usage normal. La mise à la terre est fournie par la connexion de la fiche principale à une prise murale équipée d'une borne protectrice de mise à la terre. Si une cosse de mise à la terre est fournie avec le produit, elle devrait être connectée à tout moment à une mise à la terre de protection par un conducteur de diamètre 18 AWG ou plus. L'équipement monté en châssis ne devrait être monté que sur des châssis et dans des armoires mises à la terre.

Branchez toujours la mise à la terre en premier et débranchez-la en dernier. Ne branchez pas des câbles de télécommunications à un équipement qui n'est pas mis à la terre. Assurez-vous que tous les autres câbles sont débranchés avant de déconnecter la mise à la terre.

Connexion au courant du secteur

Assurez-vous que l'installation électrique est conforme à la réglementation locale.

Branchez toujours la fiche de secteur à une prise murale équipée d'une borne protectrice de mise à la terre.

La capacité maximale permissible en courant du circuit de distribution de la connexion alimentant le produit est de 16A. Le coupe-circuit dans l'installation du bâtiment devrait avoir une capacité élevée de rupture et devrait fonctionner sur courant de court-circuit dépassant 35A.

Branchez toujours le câble d'alimentation en premier à l'équipement puis à la prise murale. Si un commutateur est fourni avec l'équipement, fixez-le en position OFF. Si le câble d'alimentation ne peut pas être facilement débranché en cas d'urgence, assurez-vous qu'un coupe-circuit ou un disjoncteur d'urgence facilement accessible est installé dans l'installation du bâtiment.

Le disjoncteur devrait déconnecter simultanément les deux pôles si le système de distribution de courant est de type IT.

Connexion d'alimentation CC

Sauf s'il en est autrement spécifié dans le manuel, l'entrée CC de l'équipement est flottante par rapport à la mise à la terre. Tout pôle doit être mis à la terre en externe.

A cause de la capacité de courant des systèmes à alimentation CC, des précautions devraient être prises lors de la connexion de l'alimentation CC pour éviter des courts-circuits et des risques d'incendie.

Les unités CC devraient être installées dans une zone à accès restreint, une zone où l'accès n'est autorisé qu'au personnel qualifié de service et de maintenance.

Assurez-vous que l'alimentation CC est isolée de toute source de courant CA (secteur) et que l'installation est conforme à la réglementation locale.

La capacité maximale permissible en courant du circuit de distribution de la connexion alimentant le produit est de 16A. Le coupe-circuit dans l'installation du bâtiment devrait avoir une capacité élevée de rupture et devrait fonctionner sur courant de court-circuit dépassant 35A.

Avant la connexion des câbles d'alimentation en courant CC, assurez-vous que le circuit CC n'est pas sous tension. Localisez le coupe-circuit dans le tableau desservant l'équipement et fixez-le en position OFF. Lors de la connexion de câbles d'alimentation CC, connectez d'abord le conducteur de mise à la terre à la borne correspondante, puis le pôle positif et en dernier, le pôle négatif. Remettez le coupe-circuit en position ON.

Un disjoncteur facilement accessible, adapté et approuvé devrait être intégré à l'installation du bâtiment.

Le disjoncteur devrait déconnecter simultanément les deux pôles si l'alimentation en courant CC est flottante.

Declaration of Conformity

Manufacturer's Name: RAD Data Communications Ltd.
Manufacturer's Address: 24 Raoul Wallenberg St., Tel Aviv 69719, Israel
declares that the product:

Product Name: ASMi-52

conforms to the following standard(s) or other normative document(s):

EMC:	EN 55022:1998 + A1:2000, A2:2003	Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement.
	EN 55024:1998 + A2:2003	Information technology equipment – Immunity A1:2001, characteristics – Limits and methods of measurement.
Safety:	EN 60950-1:2001	Information technology equipment – Safety – Part 1: General requirements.

Supplementary Information:

The product herewith complies with the requirements of the EMC Directive 89/336/EEC, the Low Voltage Directive 73/23/EEC and the R&TTE Directive 99/5/EC for wired equipment. The product was tested in a typical configuration.

Tel Aviv, 3 July 2005



Haim Karshen
VP Quality

European Contact: RAD Data Communications GmbH, Otto-Hahn-Str. 28-30, 85521
Ottobrunn-Riemerling, Germany

Glossary

Address	A coded representation of the origin or destination of data.
Agent	In SNMP, this refers to the managed system.
Analog	A continuous wave or signal (such as human voice).
Analog Loopback	A testing technique that isolates faults in transmission equipment by performing a loopback on the data at the analog (line) side of the modem.
Attenuation	Signal power loss through equipment, lines or other transmission devices. Measured in decibels.
AWG	The American Wire Gauge System, which specifies wire width.
Balanced	A transmission line in which voltages on the two conductors are equal in magnitude, but opposite in polarity, with respect to ground.
Bandwidth	The range of frequencies passing through a given circuit. The greater the bandwidth, the more information can be sent through the circuit in a given amount of time.
Baud	Unit of signaling speed equivalent to the number of discrete conditions or events per second. If each signal event represents only one bit condition, baud rate equals bps (bits per second).
Bipolar	Signaling method in E1/T1 representing a binary "1" by alternating positive and negative pulses, and a binary "0" by absence of pulses.
Bit	The smallest unit of information in a binary system. Represents either a one or zero ("1" or "0").
bps (Bits Per Second)	A measure of data transmission rate in serial transmission.
Bridge	A device interconnecting local area networks at the OSI data link layer, filtering and forwarding frames according to media access control (MAC) addresses.
Buffer	A storage device. Commonly used to compensate for differences in data rates or event timing when transmitting from one device to another. Also used to remove jitter.
Bus	A transmission path or channel. A bus is typically an electrical connection with one or more conductors, where all attached devices receive all transmissions at the same time.
Byte	A group of bits (normally 8 bits in length).

Carrier	A continuous signal at a fixed frequency that is capable of being modulated with a second (information carrying) signal.
Cell	The 53-byte basic information unit within an ATM network. The user traffic is segmented into cells at the source and reassembled at the destination. An ATM cell consists of a 5-byte ATM header and a 48-byte ATM payload, which contains the user data.
Channel	A path for electrical transmission between two or more points. Also called a link, line, circuit or facility.
Clock	A term for the source(s) of timing signals used in synchronous transmission.
Control Signals	Signals passing between one part of a communications system and another (such as RTS, DTR, or DCD), as part of a mechanism for controlling the system.
CPE (Customer Premises Equipment)	Generally refers to communications equipment located at the customers' premises for use with communication service providers' services. In some cases, these are customer-owned or leased; in other cases, these are the property of the service provider.
CRC (Cyclic Redundancy Check)	A data transmission error-detection scheme. A polynomial algorithm is performed on the data, and the resultant checksum is appended at the end of the frame. The receiving equipment performs a similar algorithm.
Current Loop	Method of data transmission. A mark (binary "1") is represented by current on the line, and a space (binary "0") is represented by the absence of current.
Data	Information represented in digital form, including voice, text, facsimile and video.
Data Link Layer	Layer 2 of the OSI model. The entity, which establishes, maintains, and releases data-link connections between elements in a network. Layer 2 is concerned with the transmission of units of information, or frames, and associated error checking.
dBm	A measure of power in communications: the decibel in reference to one milliwatt (0 dBm = 1 milliwatt and -30 dBm = .001 milliwatt).
Decibel	See dB .
Diagnostics	The detection and isolation of a malfunction or mistake in a communications device, network or system.
Digital	The binary ("1" or "0") output of a computer or terminal. In data communications, an alternating, non-continuous (pulsating) signal.
Digital Loopback	A technique for testing the digital processing of a communications device. The loopback is toward the line side of a modem, but tests most of the circuitry in the modem under test.

E1 Line	A 2.048 Mbps line, common in Europe, that supports thirty-two 64 kbps channels, each of which can transmit and receive data or digitized voice. The line uses framing and signaling to achieve synchronous and reliable transmission. The most common configurations for E1 lines are E1 PRI, and unchannelized E1.
E3	The European standard for high speed digital transmission, operating at 34 Mbps.
Encapsulation	Encapsulating data is a technique used by layered protocols in which a low level protocol accepts a message from a higher level protocol, then places it in the data portion of the lower-level frame. The logistics of encapsulation require that packets traveling over a physical network contain a sequence of headers.
Equalizer	A device that compensates for distortion due to signal attenuation and propagation time with respect to frequency. It reduces the effects of amplitude, frequency and/or phase distortion.
Ethernet	A local area network (LAN) technology which has extended into the wide area networks. Ethernet operates at many speeds, including data rates of 10 Mbps (Ethernet), 100 Mbps (Fast Ethernet), 1,000 Mbps (Gigabit Ethernet), 10 Gbps, 40 Gbps, and 100 Gbps.
Flow Control	A congestion control mechanism that results in an ATM system implementing flow control.
Frame	A logical grouping of information sent as a link-layer unit over a transmission medium. The terms packet, datagram, segment, and message are also used to describe logical information groupings.
Framing	At the physical and data link layers of the OSI model, bits are fit into units called frames. Frames contain source and destination information, flags to designate the start and end of the frame, plus information about the integrity of the frame. All other information, such as network protocols and the actual payload of data, is encapsulated in a packet, which is encapsulated in the frame.
Full Duplex	A circuit or device permitting transmission in two directions (sending and receiving) at the same time.
FXO (Foreign Exchange Office)	A voice interface, emulating a PBX extension, as it appears to the CO (Central Office) for connecting a PBX extension to a multiplexer.
FXS (Foreign Exchange Subscriber)	A voice interface, emulating the extension interface of a PBX (or subscriber interface of a CO) for connecting a regular telephone set to a multiplexer.
G.703	An ITU standard for the physical and electrical characteristics of various digital interfaces, including those at 64 kbps and 2.048 Mbps.

Gateway	Gateways are points of entrance and exit from a communications network. Viewed as a physical entity, a gateway is that node that translates between two otherwise incompatible networks or network segments. Gateways perform code and protocol conversion to facilitate traffic between data highways of differing architecture.
Impedance	The combined effect of resistance, inductance and capacitance on a transmitted signal. Impedance varies at different frequencies.
Interface	A shared boundary, defined by common physical interconnection characteristics, signal characteristics, and meanings of exchanged signals.
IP Address	Also known as an Internet address. A unique string of numbers that identifies a computer or device on a TCP/IP network. The format of an IP address is a 32-bit numeric address written as four numbers from 0 to 255, separated by periods (for example, 1.0.255.123).
Jitter	The deviation of a transmission signal in time or phase. It can introduce errors and loss of synchronization in high speed synchronous communications.
Laser	A device that transmits an extremely narrow and coherent beam of electromagnetic energy in the visible light spectrum. Used as a light source for fiber optic transmission (generally more expensive, shorter lived, single mode only, for greater distances than LED).
Loading	The addition of inductance to a line in order to minimize amplitude distortion. Used commonly on public telephone lines to improve voice quality, it can make the lines impassable to high speed data, and baseband modems.
Loopback	A type of diagnostic test in which the transmitted signal is returned to the sending device after passing through all or part of a communications link or network.
Manager	An application that receives Simple Network Management Protocol (SNMP) information from an agent. An agent and manager share a database of information, called the Management Information Base (MIB). An agent can use a message called a traps-PDU to send unsolicited information to the manager. A manager that uses the RADview MIB can query the RAD device, set parameters, sound alarms when certain conditions appear, and perform other administrative tasks.
Mark	In telecommunications, this means the presence of a signal. A mark is equivalent to a binary 1. A mark is the opposite of a space (0).
Master Clock	The source of timing signals (or the signals themselves) that all network stations use for synchronization.

Multiplexer	At one end of a communications link, a device that combines several lower speed transmission channels into a single high speed channel. A multiplexer at the other end reverses the process. Sometimes called a mux. See Bit Interleaving/Multiplexing .
Network	(1) An interconnected group of nodes. (2) A series of points, nodes, or stations connected by communications channels; the collection of equipment through which connections are made between data stations.
Node	A point of interconnection to a network.
Packet	An ordered group of data and control signals transmitted through a network, as a subset of a larger message.
parameters	Parameters are often called arguments, and the two words are used interchangeably. However, some computer languages such as C define argument to mean actual parameter (i.e., the value), and parameter to mean formal parameter. In RAD CLI, parameter means formal parameter, not value.
Payload	The 48-byte segment of the ATM cell containing user data. Any adaptation of user data via the AAL will take place within the payload.
Physical Layer	Layer 1 of the OSI model. The layer concerned with electrical, mechanical, and handshaking procedures over the interface connecting a device to the transmission medium.
Port	The physical interface to a computer or multiplexer, for connection of terminals and modems.
prompt	One or more characters in a command line interface to indicate that the computer is ready to accept typed input.
Protocol	A formal set of conventions governing the formatting and relative timing of message exchange between two communicating systems.
Pseudowire	Point-to-point connections set up to emulate (typically Layer 2) native services like ATM, Frame Relay, Ethernet, TDM, or SONET/SDH over an underlying common packet-switched network (Ethernet, MPLS or IP) core. Pseudowires are defined by the IETF PWE3 (pseudowire emulation edge-to-edge) working group.
Register	A storage device capable of receiving and holding a number of digits.
Repeater	A device which automatically amplifies, restores or reshapes signals to compensate for distortion and/or attenuation prior to retransmission.
Serial Transmission	A common mode of transmission, where the character bits are sent sequentially one at a time instead of in parallel.

Single Mode	Describing an optical wave-guide or fiber that is designed to propagate light of only a single wavelength (typically 5-10 microns in diameter).
Space	In telecommunications, the absence of a signal. Equivalent to a binary 0.
Sync	See Synchronous Transmission .
Synchronous Transmission	Transmission in which data bits are sent at a fixed rate, with the transmitter and receiver synchronized.
T1	A digital transmission link with a capacity of 1.544 Mbps used in North America. Typically channelized into 24 DS0s, each capable of carrying a single voice conversation or data stream. Uses two pairs of twisted pair wires.
Telnet	The virtual terminal protocol in the Internet suite of protocols. It lets users on one host access another host and work as terminal users of that remote host. Instead of dialing into the computer, the user connects to it over the Internet using Telnet. When issuing a Telnet session, it connects to the Telnet host and logs in. The connection enables the user to work with the remote machine as though a terminal was connected to it.
Timeslot	A portion of a serial multiplex of timeslot information dedicated to a single channel. In E1 and T1, one timeslot typically represents one 64 kbps channel.

Quick Start Guide

Installation of ASMi-52 should be carried out only by an experienced technician. If you are familiar with ASMi-52, use this guide to prepare the units for operation.

1. Installing ASMi-52

Connecting the Interfaces

1. Connect the line to the SHDSL connector.
2. Connect the DTE to the appropriate DTE connector.
3. Connect the control terminal to the CONTROL connector.

Connecting the Power

- Connect the AC or DC power to the ASMi-52 modem.

The unit has no power switch. Operation starts when power is connected to the rear panel power connector.

2. Configuring ASMi-52

Configure ASMi-52 to the required operation mode via an ASCII terminal connected to the rear panel CONTROL port directly or via a modem link.

Connecting the Terminal

➤ To connect the terminal:

1. Connect the terminal cable to the CONTROL connector of ASMi-52.
2. Turn the control terminal on.
3. Configure the terminal to the default communication parameters: 9.6 kbps, one start bit, eight data bits, no parity, one stop bit.
4. Select the full-duplex mode.
5. Turn the terminal echo off.
6. Disable any type of flow control.

You are now ready to start a control session.

Configuring the Master Clock

- To configure the master clock:
 - From the System Configuration menu (Main Menu > Configuration > System Configuration > Master Clock), configure the central ASMi-52 clock to external or internal and remote ASMi-52 clock to the receive clock.

Configuring the SHDSL Interface

- To configure the SHDSL interface:
 - From the SHDSL Configuration menu (Main Menu > Configuration > Port Configuration > SHDSL Configuration), configure the following SHDSL parameters:
 - SHDSL compatibility
 - Power backoff
 - Snext margin, if line probing is set to adaptive
 - Current margin, if line probing is set to adaptive
 - Power spectral density (for ASMi-52 with 2-wire line interface and line probing set to fixed)
 - Line probing
 - Line type (for 4-wire ASMi-52 units only)
 - Loop attenuation threshold
 - SNR margin threshold.

Configuring the DTE Interface

ASMi-52 includes a serial, E1, T1, or 10/100BaseT DTE interface configured as a single interface. ASMi-52 can be multiplexed as i.e., E1 + Serial DTE interface, or E1 + 10/100BaseT DTE interface, or Serial + 10/100BaseT DTE interface, in which case each pair of interface has to be configured separately.

Configuring the Serial Interface

- To configure the serial interface:
 - From the DTE Port Configuration (Main Menu > Configuration > Port Configuration > DTE Configuration), select the required data rate.

Configuring the E1 Interface

When configuring an E1 interface, you have to select the modem's framing mode and assign each E1 timeslot to carry data or idle code.

If in your application, an ASMi-52 unit with an E1 interface operates opposite another ASMi-52 unit, the E1 settings of the remote device are automatically matched to those of the local modem (the Units Identical Setting value is set to

YES by default). The Units Identical Setting value of the local modem overrides the management commands of the remote supervisory terminal.

➤ **To configure E1 parameters:**

- From the E1 Port Configuration menu (Main Menu > Configuration > Port Configuration > E1 Port Configuration), configure the following E1 parameters:
 - Framing mode
 - Timeslot assignment

Note

- *You can configure timeslot 0 to be looped or transparent:*
 - *Looped – timeslot 0 is sent back to the E1 interface, when operating opposite remote units with a serial data interface.*
 - *Transparent – timeslot 0 is transmitted to the remote modem.*
 - *If you operate ASMi-52 with the G732S framing, timeslot 0 is always transparent and timeslot 16 is always connected.*
 - *When operating a 2-wire ASMi-52 with E1 interface opposite ASMi-52 with a serial DTE interface (not in LS mode), assign at least three timeslots, excluding timeslot 0, to carry data.*
 - *When operating a 4-wire ASMi-52 with E1 interface opposite ASMi-52 with serial DTE interface (not in LS mode), assign at least six timeslots, excluding timeslot 0, to carry data.*
-

Configuring the T1 Interface

➤ **To configure the T1 parameters:**

- From the T1 Port Configuration menu (Main Menu > Configuration > Port Configuration > T1 Port Configuration), configure the following T1 parameters:
 - Framing mode
 - Line coding
 - Receive gain
 - Interface type
 - Transmit signal mask
 - Timeslot assignment

Configuring the 10/100BaseT Interface

- To configure 10/100BaseT parameters:
 - From the LAN Configuration menu (Main Menu > Configuration > System Configuration > LAN Configuration), configure the following LAN parameters:
 - Bridge static table
 - Aging timeout
 - LAN rate

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Appendix A. Connection Data

Chapter 1

Introduction

1.1 Overview

ASMi-52 is an SHDSL modem that operates in full-duplex over 2/4-wire lines and offers a cost-effective solution for delivering digital data to customer premises over existing copper cables. ASMi-52 handles multiple data rates in the range of 64–4608 kbps. The unit is available with a single data port or as a multiplexer with two data ports. The modem supports X.21, V.35, RS-530, E1 and T1 interfaces. In addition, ASMi-52 may contain an Ethernet/Fast Ethernet bridge with VLAN support (via management LAN port).

ASMi-52 uses TC-PAM coding and complies with the ITU-T G.991.2 requirements, see page [1-7](#).

Certain multiplexer application combinations are possible. See [Table 1-4](#) for the multiplexer applications.

Product Options

DTE Interface

ASMi-52 supports the following DTE interfaces:

- X.21
- V.35
- RS-530
- E1, as per G.704
- T1
- Ethernet/Fast Ethernet bridge with VLAN support (combined with management LAN port)

The following combinations of interfaces can be multiplexed:

- V.35 + LAN

- E1 + LAN
- E1 + serial port (V.35, X.21, RS-530).

Line Interface

ASMi-52 is available for ordering in two models: for operation over a 2-wire or 4-wire lines.

Unit Enclosure

ASMi-52 is available in a plastic, metal, or rail-mount enclosure.

Applications

Figure 1-1 illustrates a typical ASMi-52 application, in which standalone modems operate opposite each other. *Figure 1-2* shows ASMi-52 units operating opposite a centrally located DXC rack. *Figure 1-3* shows ASMi-52 modems operating opposite a centrally located LRS-24 rack.

The following multiplexer applications are supported:

- A multiplexer unit opposite the same type of multiplexer unit
- A DXC opposite multiplexer units (the multiplexer unit is a CPE), where the DXC supports a multiplexer (the CPE is the receive clock source)
- A multiplexer unit configured as a single unit opposite a single unit (where a multiplexer unit is configured as a single unit)
- A multiplexer unit opposite an E1 unit, where the single or multiplexer unit is configured as an E1 single unit.

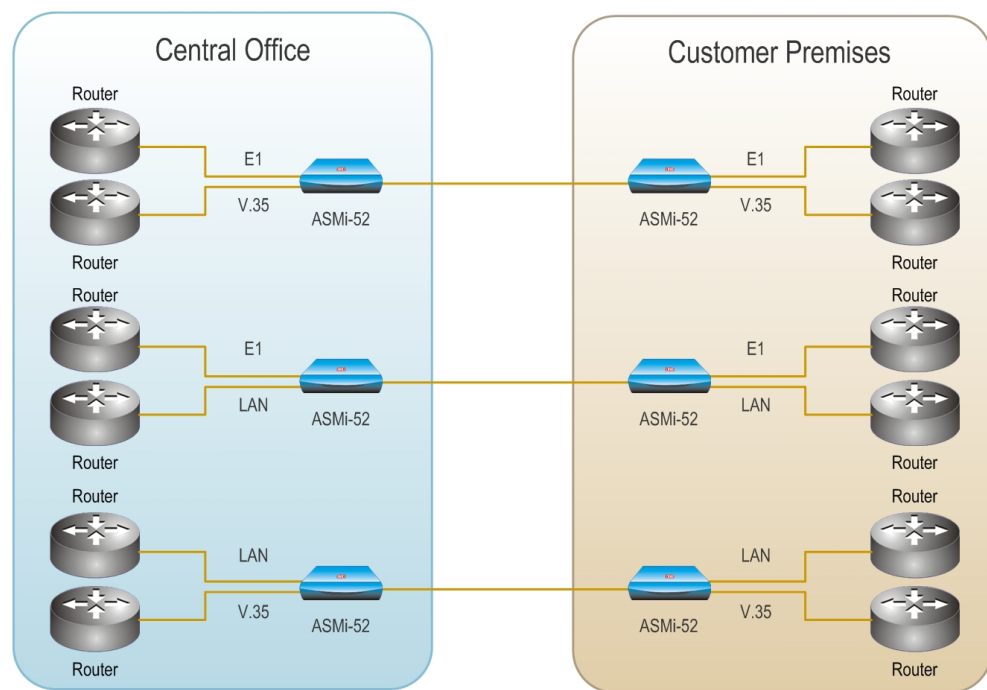


Figure 1-1. Standalone Modem Application

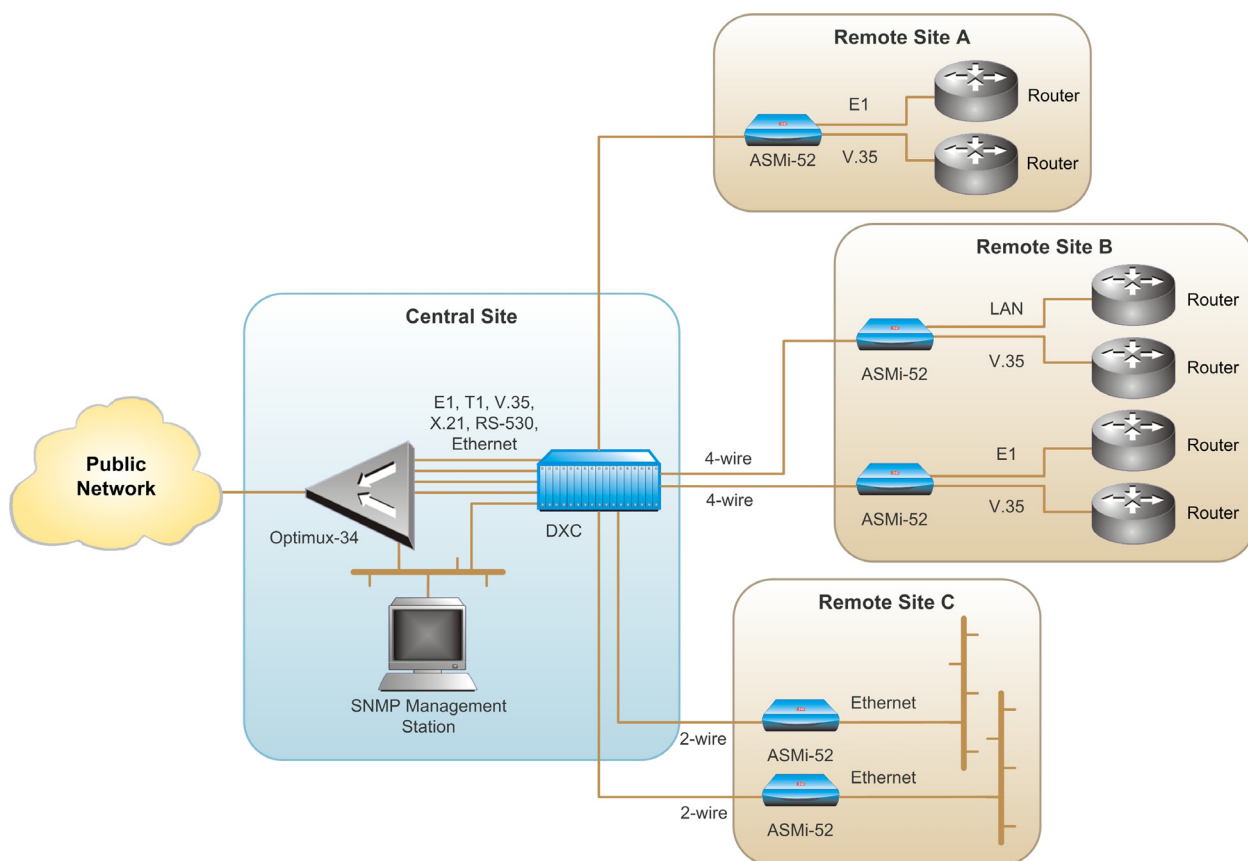


Figure 1-2. ASMi-52 Modems Operating Opposite a Centrally Located DXC Rack

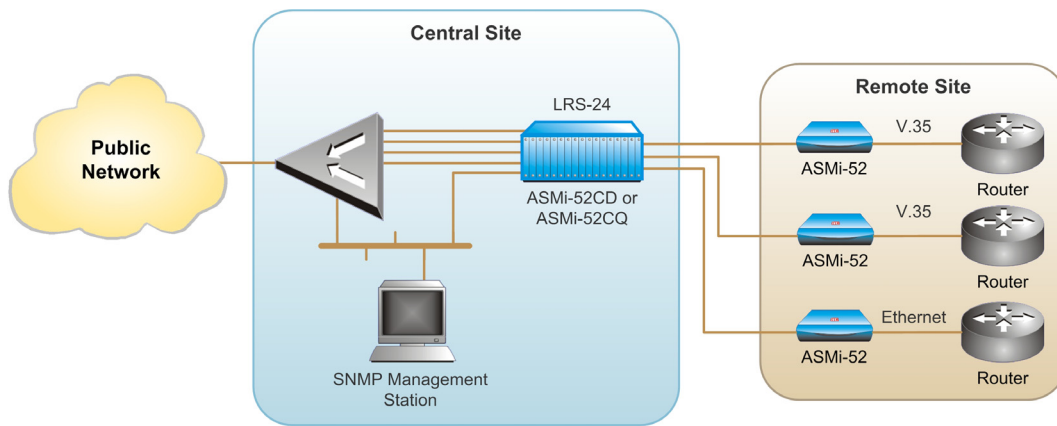


Figure 1-3. ASMi-52 Modems Operating opposite ASMi-52CD Cards

Features

Functionality

ASMi-52 can be configured to operate in a CO (central office) or CPE (customer premises equipment) mode.

Line Interface

ASMi-52 extends the range of data transmission over 2/4-wire lines up to 7.0 km (4.3 miles), by employing SHDSL TC-PAM technology. ASMi-52 operation complies with the requirements of the ITU-T G.991.2 and G.826 standards. In addition, 4-wire ASMi-52 units can be configured to operate over 2-wire lines.

Table 1-1 lists typical ASMi-52 ranges over 2/4-wire 26 AWG line.

Table 1-1. Typical Ranges (26 AWG)

Data Rate	2-wire		4-wire	
[kbps]	[km]	[miles]	[km]	[miles]
64	7.5	4.6	—	—
128	7.0	4.3	7.1	4.4
256	6.7	4.1	6.8	4.2
384	6.5	4.0	6.7	4.1
512	6.3	3.9	6.6	4.1
1024	5.3	3.3	6.0	3.7
1536	5.0	3.1	5.6	3.5
2048	4.5	2.8	4.7	2.9
2304	4.2	2.6	4.5	2.8
4096	—	—	3.7	2.3
4608	—	—	3.0	1.8

Note

The typical ranges are based on error-free lab tests without noise.

ASMi-52CD/4W operates at data rates up to 4608 kbps, depending on internal or external clock.

DTE Interface

ASMi-52 supports the following DTE interfaces:

- X.21
- V.35
- RS-530
- E1, as per G.704
- T1
- Ethernet/Fast Ethernet bridge with VLAN support (combined with management LAN port).

When ASMi-52 is ordered only with the 10/100BaseT port, it can be used to transfer user and management data.

Note

An unbalanced E1 interface is provided via an adapter cable (CBL-RJ-45/2BNC/E1). The impedance conversion (120Ω to 75Ω) is performed by ASMi-52 automatically when the adapter cable connection is detected.

ASMi-52 supports multiple data rates between the range of 64 kbps and 4608 kbps. The data rate depends on the following factors:

- Unit rate mode (regular or low speed)
- Line interface type (2-wire or 4-wire)
- DTE interface type of the local and remote units (serial or E1/T1)
- Clock mode (internal or external)
- Single or multiplexed.

[Table 1-2](#) and [Table 1-3](#) detail the ASMi-52 data rates with the possible combinations of rate mode types, line/DTE interface types, and clock modes.

Table 1-2. ASMi-52 Data Rates

DTE Interface and Clock Mode		Line Interface	
Local ASMi-52	Remote ASMi-52	2-wire	4-wire
Serial DTE interface, internal clock	Serial DTE interface	$n \times 64$ kbps ($n = 1, 2, \dots, 32, 36$)	$n \times 128$ kbps ($n = 1, 2, \dots, 32, 36$)
Serial DTE interface, external clock	Serial DTE interface	$n \times 64$ kbps ($n = 1, 2, \dots, 36$)	$n \times 128$ kbps ($n = 1, 2, \dots, 36$)
Serial DTE interface	E1 DTE interface	$n \times 64$ kbps ($n = 3, 4, \dots, 32$)	$n \times 128$ kbps ($n = 3, 4, \dots, 16$)
E1 DTE interface	Serial DTE interface	$n \times 64$ kbps ($n = 3, 4, \dots, 32$)	$n \times 128$ kbps ($n = 3, 4, \dots, 16$)
E1 DTE interface	E1 DTE interface	$n \times 64$ kbps ($n = 1, 2, \dots, 32$)	$n \times 64$ kbps ($n = 1, 2, \dots, 32$)
T1 DTE interface	T1 DTE interface	$n \times 64$ kbps ($n = 1, 2, \dots, 24$)	$n \times 64$ kbps ($n = 1, 2, \dots, 24$)
Multiplexer	Serial/E1 DTE (any) interface	$n \times 64$ kbps ($n = 1, 2, \dots, 32$)	$n \times 64$ kbps ($n = 1, 2, \dots, 32$)

Table 1-3. ASMi-52 Data Rates (Low Speed Mode)

Unit and DTE Interface Type		Line Interface	
Local Unit	Remote Unit	2-wire	4-wire
ASMi-52 in low speed mode	ASMi-52 in low speed mode	$n \times 64$ kbps ($n = 1, 2, \dots, 32$)	$n \times 64$ kbps ($n = 1, 2, \dots, 32$)
	ASMi-52 with serial DTE interface	$n \times 64$ kbps ($n = 3, 4, \dots, 32$)	$n \times 128$ kbps ($n = 3, 4, \dots, 16$)
	ASMi-52 with E1 DTE interface	$n \times 64$ kbps ($n = 1, 2, \dots, 32$)	$n \times 64$ kbps ($n = 1, 2, \dots, 32$)

Note

The data rates for a multiplexer modem in [Table 1-2](#) include the entire data rates sum for all the interfaces.

Multiplexer Functionality**Notes**

- The multiplexer unit cannot be configured as a device with only a LAN port. It must have a DTE or IR port.
- The hardware of a single unit-based product with a LAN port manager is different from that of a multiplexer-based product.

The hardware has different options for the modem to work as a multiplexer. [Table 1-4](#) shows all the available multiplexer combinations that can be used.

Table 1-4. Possible Multiplexer Applications

<i>CO/CPE</i>	<i>E1</i>	<i>Serial DTE</i>	<i>LAN</i>	<i>E1+Serial DTE</i>	<i>E1+LAN</i>	<i>Serial DTE+LAN</i>
<i>E1</i>	E1↔E1	E1↔Serial DTE	E1↔LAN	E1↔E1	E1↔E1	E1↔Serial DTE
				E1↔Serial DTE		
				E1↔E1+Serial DTE	E1↔E1+LAN	E1↔Serial DTE+LAN
<i>Serial DTE</i>	Serial DTE↔E1	Serial DTE↔Serial DTE	Serial DTE↔LAN	Serial DTE↔E1	Serial DTE↔E1	Serial DTE↔Serial DTE
				Serial DTE↔Serial DTE		
<i>LAN</i>	LAN E1	LAN Serial DTE	LAN LAN	LAN E1	LAN E1	LAN Serial DTE
				LAN Serial DTE		
<i>E1+Serial DTE</i>	E1↔E1	E1↔Serial DTE	E1↔LAN	E1↔E1+Serial DTE	E1↔E1	E1↔Serial DTE
	Serial DTE↔E1	Serial DTE↔Serial DTE	V.35↔LAN	E1↔E1		
	E1+Serial DTE↔E1			E1↔Serial DTE	E1↔E1+LAN	E1↔Serial DTE+LAN
				Serial DTE↔E1	Serial DTE↔E1	Serial DTE↔Serial DTE
				Serial DTE↔Serial DTE		
				E1+Serial DTE↔E1		
				E1+Serial DTE↔E1+Serial DTE	E1+Serial DTE↔E1	
<i>E1+LAN</i>	E1↔E1	E1↔Serial DTE	E1↔LAN	E1↔E1+Serial DTE	E1↔E1	E1↔Serial DTE
	E1+LAN↔E1			E1↔E1		
				E1↔Serial DTE	E1↔E1+LAN	E1↔Serial DTE+LAN
				E1+LAN↔E1	E1+LAN↔E1	
					E1+LAN↔E1+LAN	

CO/CPE	E1	Serial DTE	LAN	E1+Serial DTE	E1+LAN	Serial DTE+LAN
<i>Serial DTE+LAN</i>	Serial DTE↔E1	Serial DTE↔ Serial DTE	Serial DTE↔LAN		Serial DTE↔E1	Serial DTE ↔Serial DTE
	Serial DTE+ LAN↔E1			Serial DTE↔E1		
				Serial DTE↔ Serial DTE		
				Serial DTE+ LAN↔E1	Serial DTE+ LAN↔E1	
						Serial DTE +LAN↔Serial DTE +LAN
<i>DXC</i>				DXC↔E1+ Serial DTE	DXC↔E1 +LAN	DXC↔Serial DTE+LAN
<i>LRS-24</i>				LRS-24↔ E1+Serial DTE	LRS-24↔ E1+LAN	LRS- 24↔Serial DTE+LAN

Note *Serial DTE = V.35, X.21, RS-530.*

The following are multiplexer conditions when working with the ASMi-52 unit:

- E1+Serial DTE can work as an 'E1 port only' or a serial DTE port only.
- E1+LAN can work as an 'E1 port only'.
- LAN+Serial DTE can work as a 'Serial DTE port only'.
- E1+Ethernet and Serial DTE+Ethernet can be configured as a single port only ('E1 only' or 'Serial DTE only') while the Ethernet port operates as a management port only.

Note *ASMi-52 E1 or Serial DTE units with a LAN management port previously released with software versions earlier than version 2.5 cannot operate as a multiplexer unit (E1+LAN, Serial DTE+LAN) with version 2.5 and higher due to hardware differences.*

Timing

ASMi-52 supports three clock modes:

- Internal, derived from its internal oscillator (CO mode)
- External, supplied by the attached DTE
- Receive, recovered from the received line signal (CPE mode).

Management

ASMi-52 supports the following management options:

- ASCII terminal or Easy Config hand-held device via V.24/RS-232 terminal port
- Telnet via a dedicated 10/100BaseT port
- SNMP network management (RADview) via a dedicated 10/100BaseT port
- PC running a Web browsing application (ConfiguRAD)
- Inband management via a dedicated timeslot (units with E1/T1 interface only).

EOC

ASMi-52 provides an inband management channel (EOC) for end-to-end system management and supervision. This management channel uses SHDSL overhead bits and operates without interfering with data transmission.

ConfiguRAD

ConfiguRAD is a user-friendly Web-based terminal management system used for remote device configuration and maintenance. It is embedded in ASMi-52 and provided at no extra cost. ConfiguRAD can be run from any standard Web browser.

Dial-In

The V.24 terminal port supports a dial-up modem connection for remote management of ASMi-52 over telephone lines.

Dial-Out

The V.24 terminal port supports alarm dial-out.

Diagnostics

ASMi-52 supports activation of the following:

- Local loopback
- Remote loopback
- Remote loopback at the SHDSL repeater (activated from the local unit)
- BERT+RLB or BERT from either CO or CPE (not in the ASMi-52/ETH models).

All tests can be activated from the local unit or from the remote unit.

ASMi-52 includes an internal Bit Error Rate Tester (BERT) for complete testing of the local and remote modem and the link quality without any need for an external test equipment. ASMi-52 runs an internal pseudo-random 511-bit test pattern in accordance with the ITU V.52 standard.

Real time alarms provide information on the system status, indicating management failure, synchronization loss and other conditions.

Statistics Collection

ASMi-52 supports SHDSL and E1/T1 statistics collection and standard G.826.

Alarm Reporting

ASMi-52 alarms are relayed via a dedicated 6-pin terminal block connector.

SHDSL Repeaters

Up to eight SHDSL repeaters can be installed in line to increase the operation range of the modem. ASMi-52 provides basic management of the repeaters.

Note

SHDSL repeaters do not support ASMi-52 versions with T1 interface.

1.2 Physical Description

[Figure 1-4](#) shows a 3D view of the ASMi-52 unit in the plastic enclosure. The location of LEDs and connectors on the metal enclosure is similar. The rail-mount enclosure has a completely different design and is described in [Chapter 2](#).



Figure 1-4. ASMi-52, 3D View

The front panel of a desktop unit includes several LEDs, which display the status of power, data flow and provide diagnostics. For a detailed description of the front panel, see [Chapter 3](#).

The rear panel includes an AC/DC power connector, a DTE connector, a line connector, a 10/100BaseT port, a V.24 terminal connector, and an alarm relay port. The ASMi-52 rear panel is described in greater detail in [Chapter 2](#).

1.3 Functional Description

This section provides a functional description of ASMi-52 in the form of block diagrams ([Figure 1-5](#) and [Figure 1-6](#)).

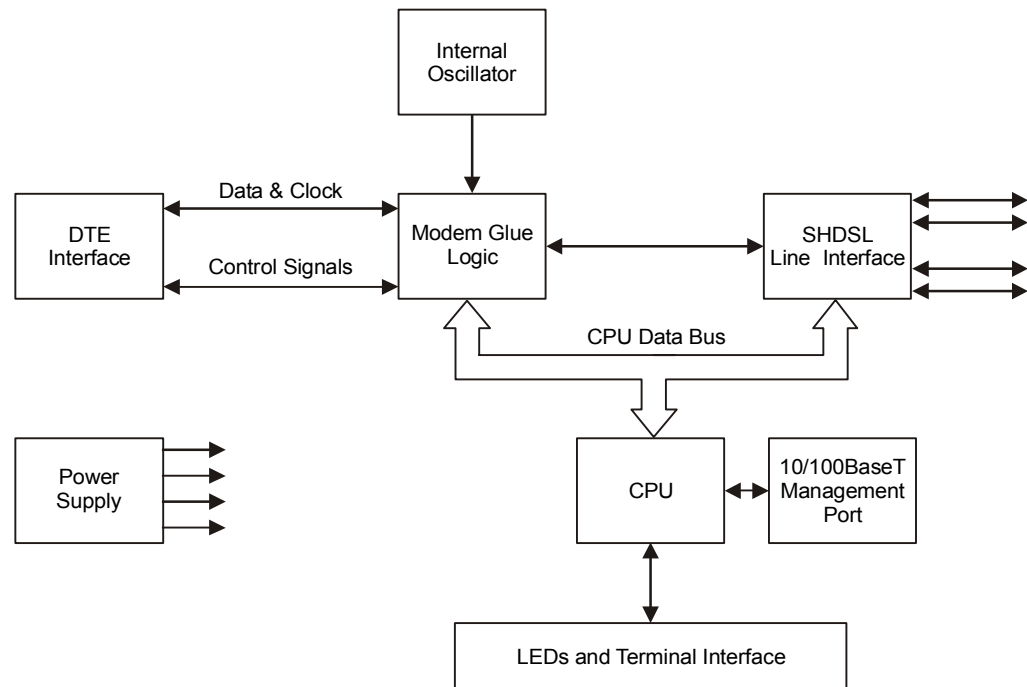


Figure 1-5. ASMi-52/4W with V.35 Interface and 10/100BaseT Management Port

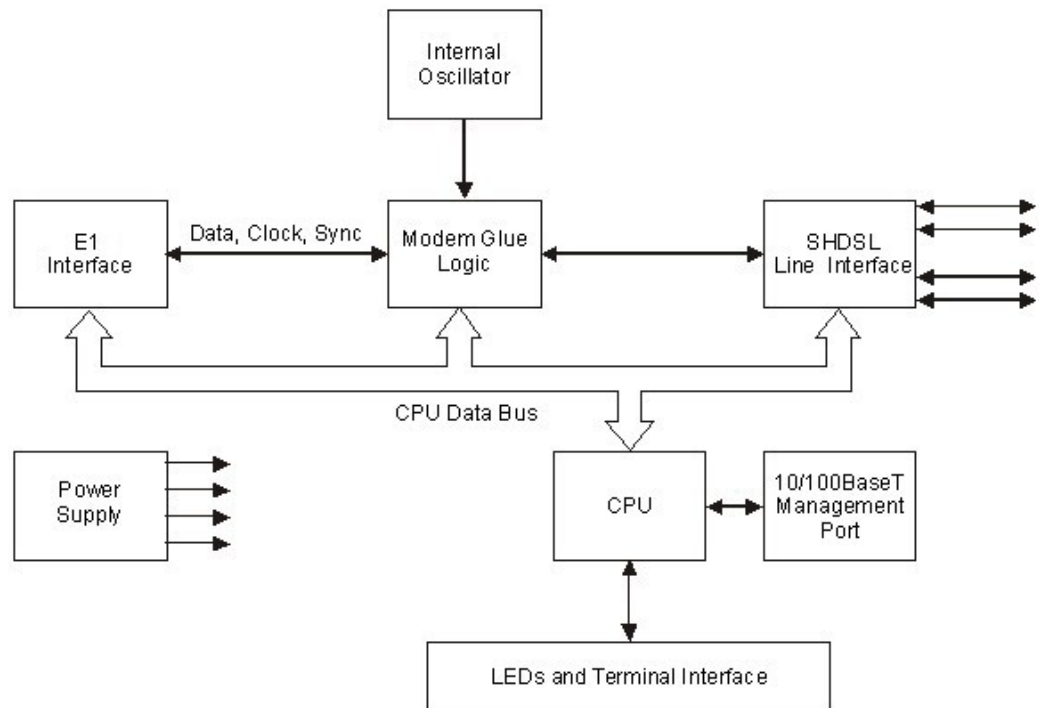


Figure 1-6. ASMi-52/4W with Framed E1 Interface and 10/100BaseT Management Port

The ASMi-52 modem consists of the following major modules:

DTE interface – Prepares the digital data coming from the DTE into a data stream for modem glue logic. In addition, it translates the data from the modem glue logic into digital data to be sent to the DTE.

Internal oscillator – Serves as a source of internal clock for the ASMi-52 unit.

Modem glue logic module – Processes the data from/to the SHDSL interface module.

SHDSL line interface – Translates the received and transmitted data from the line to the DTE interface.

Power supply – Provides 2.5V, 3.3V, 5V and -5V to the ASMi-52 internal elements.

CPU – Controls the ASMi-52 operation.

10/100BaseT management port – Provides LAN connection to the SNMP management station or Telnet host.

LEDs and terminal interface – Provides modem status information via LED indicators on the front panel, and communicates with the supervisory terminal.

1.4 Technical Specifications

Line Interface	<i>Type</i>	2/4-wire unconditioned dedicated line (twisted pair)
	<i>Line Coding</i>	TC-PAM
	<i>Range</i>	See Table 1-1
	<i>Impedance</i>	135Ω
	<i>Connector</i>	RJ-45
	<i>Standard</i>	ITU-T 991.2, ETSI 101 524, G.826
	<i>E1 Jitter Performance</i>	As per ITU G.823
	<i>Protection</i>	ITU K.21, UL1950
DTE Interface	<i>Data Rate</i>	Depends on the DTE/line interface type and clock mode (see Table 1-2 and Table 1-3) • 2-wire (external clock): 64–2304 kbps, 2-wire (internal clock): 64–2048, 2304 kbps • 4-wire (external clock): 64–4608 kbps, 4-wire (internal clock): 64–4096, 4608 kbps
	<i>Coding</i>	E1: HDB3 T1: B8ZS or AMI
	<i>Line Impedance</i>	E1: 120Ω, balanced 75Ω, unbalanced (via adapter cable) T1: 100Ω, balanced
	<i>Connectors</i>	X.21: 15-pin, D-type, female V.35: 34-pin, female RS-530: 25-pin, D-type, female E1: RJ-45, balanced or unbalanced (via adapter cable) T1: RJ-45 Ethernet (10/100BaseT bridge with VLAN support) – RJ-45
	<i>Management Ports</i>	<i>V.24/RS-232 Control Port</i>
	<i>Interface</i>	V.24/RS-232 DTE
	<i>Connector</i>	9-pin D-type, female
	<i>Format</i>	Asynchronous

	<i>Baud Rate</i>	9.6 to 115.2 kbps
	<i>Ethernet Port</i>	
	<i>Interface</i>	10/100BaseT
	<i>Connector</i>	RJ-45 shielded
Timing		Derived from three alternative sources: • Internal oscillator • External, from the attached DTE • Receive, derived from the received signal
Diagnostics	<i>Loopbacks</i>	ITU V.54: • Local analog loopback, activated via the management software or by the DTE interface signal (V.35 and RS-530 only) • Remote digital loopback, activated via the management software or by the DTE interface signal (V.35 and RS-530 only) • Remote loopback at the SHDSL repeater
	<i>BER Test</i>	BERT+RLB or BERT from either CO or CPE (not in the ASMi-52/ETH models)
	<i>Performance Monitoring</i>	• SHDSL statistics collection • E1 with CRC-4 or T1 with ESF framing per ITU G.706 • E1 without CRC-4 or T1 with SF framing bipolar violations (BPV)
Alarm Relay	<i>Operation</i>	Normally Open and Normally Closed, using different pins
	<i>Connector</i>	Terminal block, 6-pin
Indicators	<i>PWR (green)</i>	Power
	<i>TEST (red)</i>	Test
	<i>SYNC A/B (green/red)</i>	Synchronization of DSL line
	<i>DATA (yellow)</i>	Data Transfer (except E1 and T1 options)
	<i>E1/T1 SYNC (red)</i>	Loss of E1/T1 synchronization (E1 and T1 options only)
	<i>AIS (yellow)</i>	"All 1s string" is received (E1 or T1 interface only)

	<i>ALM (red)</i>	Alarm
Physical	<i>Plastic Enclosure</i>	
	<i>Height</i>	43.7 mm (1.7 in)
	<i>Width</i>	217 mm (8.5 in)
	<i>Depth</i>	170 mm (6.7 in)
	<i>Weight</i>	0.5 kg (1.1 lb)
	<i>Metal Enclosure</i>	
	<i>Height</i>	47.3 mm (1.8 in)
	<i>Width</i>	215 mm (8.4 in)
	<i>Depth</i>	152.5 mm (6.0 in)
	<i>Weight</i>	0.7 kg (1.5 lb)
	<i>Rail-Mount Metal Enclosure</i>	
	<i>Height</i>	150 mm (5.9 in)
	<i>Width</i>	70 mm (2.7 in)
Power	<i>Wide range power supply</i>	100–240 VAC, 50/60 Hz or 48/60 VDC nominal (40 to 72 VDC)
	<i>24 VDC</i>	24 VDC nominal (18 to 36 VDC)
	<i>Power Consumption</i>	2-wire: 6W max 4-wire: 7W max
Environment	<i>Temperature</i>	Standalone: 0° to 50°C (32° to 122°F) Rail-mount: –20° to 70°C (–4° to 158°F)
	<i>Humidity</i>	Up to 90%, non-condensing
	<i>Shock (Rail-Mount)</i>	IEC 60068-2-27 shock 15g, 11 ms duration, 18 shocks
	<i>Vibration (Rail-Mount)</i>	- IEC 60068-2-6 vibration 1 mm 2 – 13.2 Hz, 90 min

- 0.7g, 13.2 – 100 Hz, 90 min.;
3.5 mm, 3 – 9 Hz, 10 cycles
- 1 octave/min; 1g, 9 – 150 Hz
- 10 cycles, 1 octave/min

Chapter 2

Installation and Setup

This chapter describes installation and setup procedures for the standalone ASMi-52 modem.

After installing the unit:

- Refer to [Chapter 3](#) for the operating instructions.
- Refer to [Chapter 4](#) for the detailed system configuration procedures using an ASCII terminal connected to the ASMi-52 control port.

If a problem is encountered, refer to [Chapter 5](#) for test and diagnostic instructions.



Internal settings, adjustment, maintenance, and repairs may be performed only by a skilled technician who is aware of the hazards involved.

Always observe standard safety precautions during installation, operation, and maintenance of this product.

The ASMi-52 standalone unit is designed for desktop or bench installation and is delivered as a fully assembled unit. No provisions are made for bolting the unit to a tabletop.

► **To install ASMi-52:**

1. Connect the line (see [Connecting to SHDSL](#) below).
2. Connect the DTE (see [Connecting to DTE](#) below).
3. Connect the unit to power (see [Connecting to Power](#) below).

2.1 Site Requirements and Prerequisites

AC-powered ASMi-52 units should be installed within 1.5m (5 ft) of an easily-accessible grounded AC outlet capable of furnishing the voltage in accordance with ASMi-52 nominal supply voltage.

DC-powered ASMi-52 units require a -48 VDC (or 24 VDC) power source, which must be adequately isolated from the main supply.

Allow at least 90 cm (36 in) of frontal clearance for operation and maintenance accessibility. Allow at least 10 cm (4 in) clearance at the rear of the unit for signal lines and interface cables.

The ambient operating temperature of ASMi-52 should be 0° to 50°C (32° to 122°F), at a relative humidity of up to 90%, non-condensing.

The plastic and metal enclosures are also available in -20°–70°C (-4°–158°F) extended temperature versions (by special request).

2.2 Package Contents

The ASMi-52 package includes the following items:

- One ASMi-52 unit
- Technical documentation CD
- Power connection accessories (depending on which power option was ordered):
 - Power cord (VAC) and AC/DC plug (-48 VDC)
 - PLUG-DC/TB-S Terminal block kit (+24 VDC)
- CBL-RJ45/2BNC/E1 adapter cable for unbalanced E1 interface (if ordered)
- RM-33-2 rack mount kit for the plastic enclosure unit (if ordered)
- RM-35 or WM-35 rack mount kits for the metal enclosure unit (if ordered)

2.3 Mounting the Rail Mount Unit

Note *This step refers only to the rail mounted ASMi-52. For instructions on rack mounting of plastic and metal enclosures, refer to the Rack Mounting Kit for 19-inch Racks guide that comes with the RM kit.*

➤ **To mount the rail mount unit:**

1. Orient the spring-loaded rail mount bracket on rear of the unit toward the rail.
2. Push the unit onto the rail to snap it into place (see [Figure 2-1.](#))

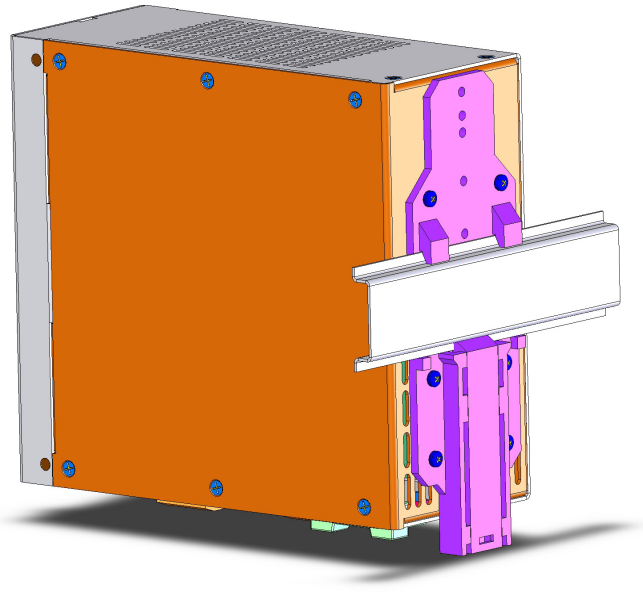


Figure 2-1. Rack Mount Fittings

► **To remove a rail mounted unit:**

1. Insert a small flat screwdriver into the hole at the end of the spring-loaded mounting bracket at the bottom rear of the unit (see [Figure 2-2](#).)

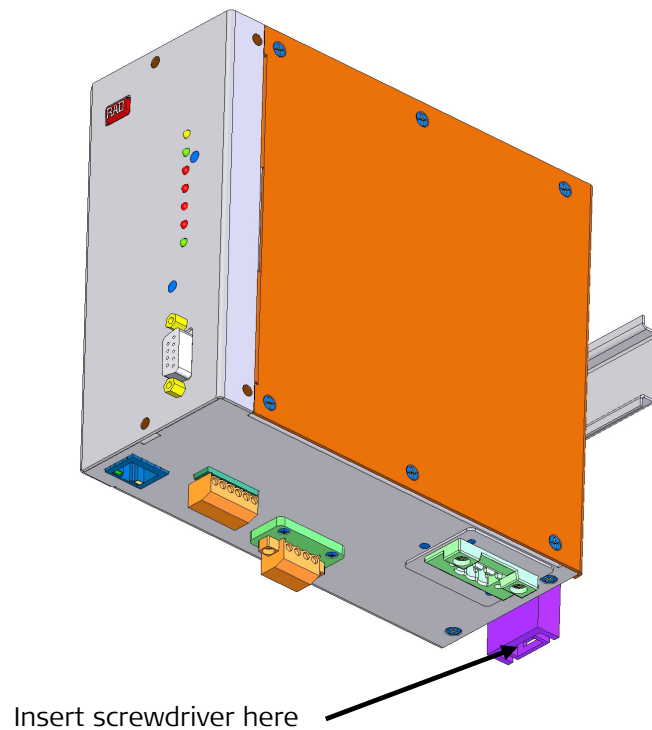


Figure 2-2. Removing the Unit

2. While supporting the unit from below, press the mounting bracket down with the screwdriver, and lift the unit carefully forward, away from the rail mount.

2.4 Connecting the Interfaces

Figure 2-3 illustrates a typical rear panel of ASMi-52 in a plastic enclosure with a 4-wire line interface, E1 DTE interface, user LAN interface, alarm relay port, and the control port.

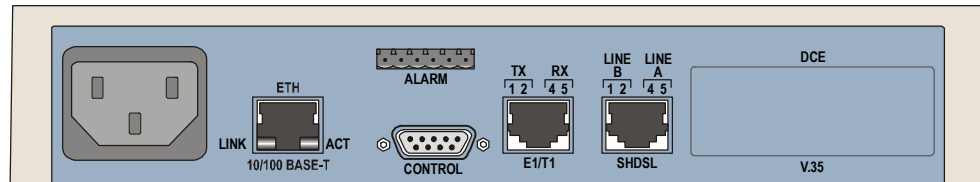


Figure 2-3. ASMi-52 Typical Rear Panel (Plastic Enclosure)

Figure 2-4 illustrates the rear panel of ASMi-52 in a metal enclosure with a 4-wire line interface, the user LAN interface, and the control port.

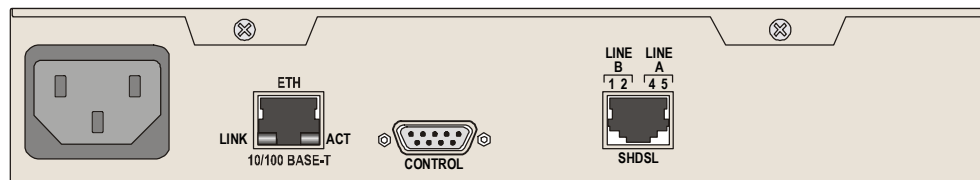


Figure 2-4. ASMi-52 Rear Panel (Metal Enclosure)

Figure 2-5 illustrates the lower panel in the rack-mount version with the line interface and power connected by terminal block, the user LAN interface, and the alarm port. The control port is on the front panel.

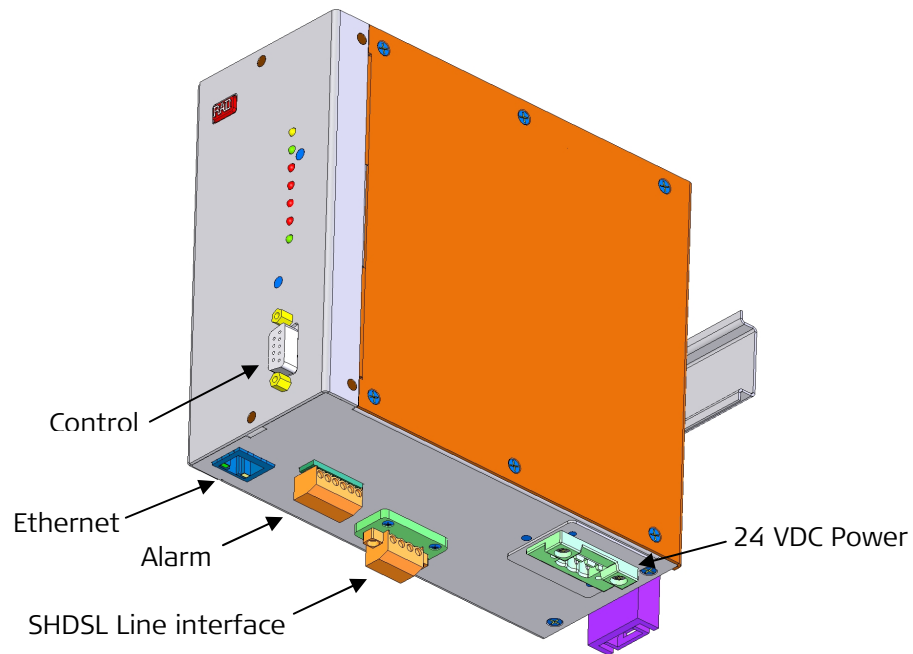


Figure 2-5. ASMi-52 Rail Mount Unit Connectors

Connecting to SHDSL Equipment

The ASMi-52 line interface on a standard (metal or plastic enclosure) terminates in an 8-pin RJ-45 connector. On the rail-mount version, the SHDSL line connector is a terminal block.

► To connect the SHDSL line:

- Standard metal/plastic enclosure: connect the cross-cable (see *Appendix A*) to the RJ-45 connector designated SHDSL
- Rail-mount enclosure: connect an appropriate cable to the terminal block on the bottom panel.

Connecting to DTE Equipment

The ASMi-52 DTE interface provides interface for input/output data, clock reference and control signals between the modem and the DTE. The DTE interface terminates in one of the following connectors:

- X.21 – 15-pin, D-type, female
- V.35 – 34-pin, female
- RS-530 – 25-pin, D-type, female
- Balanced E1 – RJ-45
- Unbalanced E1 – two BNC coax via adapter cable
- T1 – RJ-45
- ETH – RJ-45.

➤ **To connect the DTE interface:**

- Connect the DTE to the appropriate rear panel DTE interface connector of the ASMi-52 modem.

Appendix A specifies the DTE connector pinouts.

Connecting to External Alarm Devices

The external alarm devices are connected to ASMi-52 via the Alarm Relay port provided on the rear panel (or on the bottom panel in the case of the Rail-Mount model).

➤ **To connect the alarm relay:**

- Connect the external alarm device to the rear panel terminal block connector designated ALARM. Refer to *Appendix A* for the connector pinout and alarm functions.

2.5 Connecting to Power

ASMi-52 is equipped with a dual input AC/DC power supply. AC or DC power is supplied to ASMi-52 via a standard 3-prong power input connector on the rear panel (see *Figure 2-3*).



Before connecting this unit to a power source and connecting or disconnecting any other cable, the protective earth terminals of this unit must be connected to the protective ground conductor of the mains (AC or DC) power cord. If you are using an extension cord (power cable) make sure it is grounded as well.

Any interruption of the protective (grounding) conductor (inside or outside the instrument) or disconnecting of the protective earth terminal can make this unit dangerous. Intentional interruption is prohibited.

Connecting to AC Power

AC power should be supplied through the 1.5m (5 ft) standard power cable terminated by a standard 3-prong plug. The cable is provided with the unit.

➤ **To connect AC power:**

1. Connect the power cable to the power connector on the ASMi-52 rear panel.
2. Connect the power cable to the mains outlet.

The unit turns on automatically upon connection to the mains.

Connecting to DC Power

DC power is supplied to ASMi-52 via a compatible AC/DC plug for attaching DC power supply lines.

- **To connect DC power:**
 - Refer to the DC power supply connection supplement.

Chapter 3

Operation

This chapter provides the following information for the ASMi-52 modem:

- ASMi-52 front-panel indicators
- Operating procedures (turn-on, front-panel indications, performance monitoring and turn-off)
- ASMi-52 default settings.

Installation procedures given in Chapter 2 must be completed and checked before attempting to operate ASMi-52.

3.1 Turning On ASMi-52

► To turn on ASMi-52:

- Connect the power cord to the mains.

The PWR indicator lights up and remains lit as long as ASMi-52 is receiving power.

ASMi-52 requires no operator attention once installed, with the exception of occasional monitoring of front panel indicators. Intervention is only required when ASMi-52 must be configured to its operational requirements, or diagnostic tests are performed.

3.2 Indicators

The front and rear panels of ASMi-52 include a series of LED indicators that show the current operating status of the unit.

Front Panel Indicators

Figure 3-1 shows the front panel of the 2-wire ASMi-52 unit in a plastic enclosure with an E1 interface. *Figure 3-2*, *Figure 3-3*, *Figure 3-4*, *Figure 3-5*, *Figure 3-6*, and *Figure 3-7* illustrate the front panel options for the ASMi-52 4-wire unit in its plastic enclosure with different combinations of E1 (T1), DTE Serial Data and Ethernet interfaces.

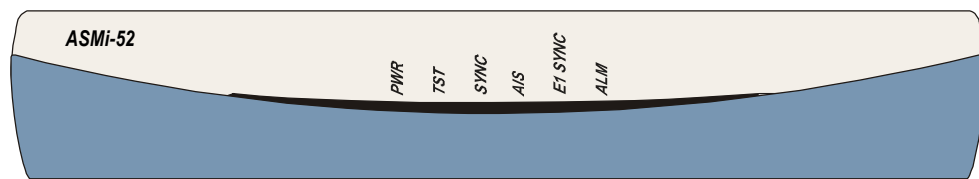


Figure 3-1. ASMi-52 Front Panel, E1 Interface (2 Wire)

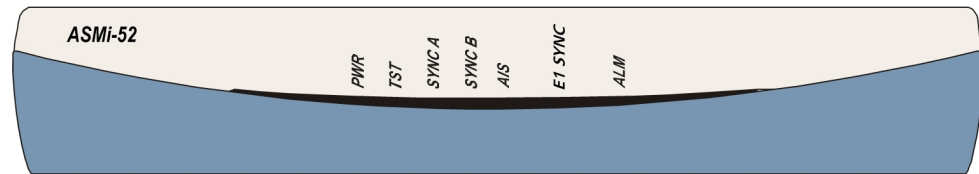


Figure 3-2. ASMi-52 Front Panel, E1 Interface (4 Wire)

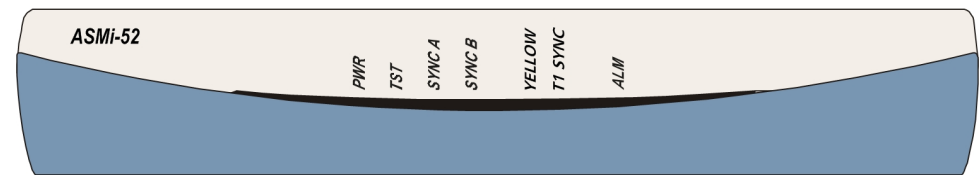


Figure 3-3. ASMi-52 Front Panel, T1 Interface (4 Wire)

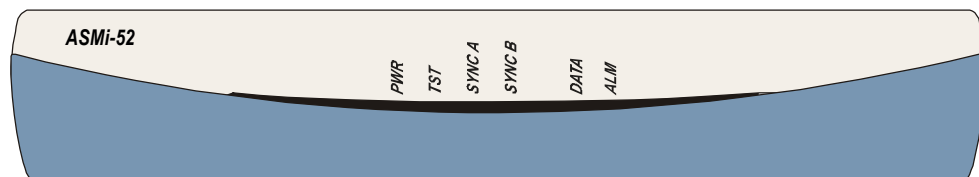


Figure 3-4. ASMi-52 Front Panel, DTE Serial Interface (4 Wire)

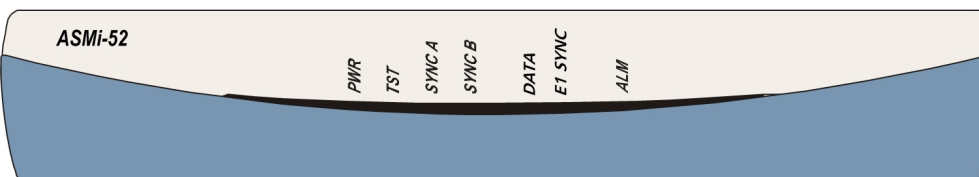


Figure 3-5. ASMi-52 Front Panel, E1+DTE Serial Interface (4 Wire)

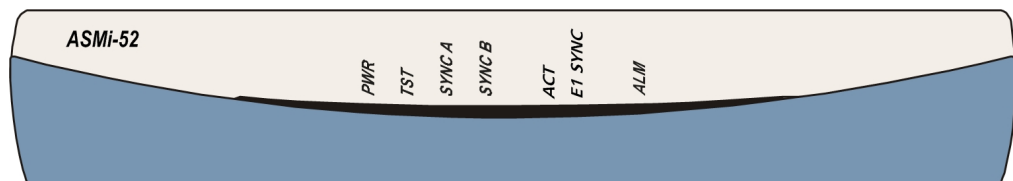


Figure 3-6. ASMi-52 Front Panel, E1+Ethernet Interface (4 Wire)

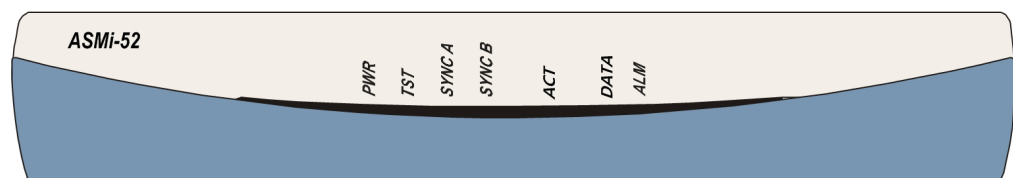


Figure 3-7. ASMi-52 Front Panel, DTE Serial Interface+Ethernet (4 Wire)

Table 3-1 lists and describes the front panel indicators.

Table 3-1. Front Panel LEDs

Name	Color	State	Description
PWR	Green	On	Power is On
TST	Red	On	A loopback test is active in a local or remote unit
SYNC A/B	Red/green	On (red)	Link is not synchronized
		On (green)	Link is synchronized
		Flashing	The line is connected properly and the synchronization process is taking place
AIS	Yellow	On	"All 1s string" is received at the E1 interface
YELLOW	Yellow	On	"All 1s string" is received at the T1 interface
E1/T1 SYNC	Red	On	Loss of E1 or T1 synchronization
DATA	Yellow	Flashing	Data is being transferred
ALM	Red	On	An alarm enters the buffer of local or remote unit
ACT	Yellow	Flashing	For Ethernet, flashes according to the Ethernet traffic activity (10/100BaseT connector), available only when multiplexed

Rear Panel Indicators

Table 3-2 lists and describes the rear panel indicators.

Table 3-2. Rear Panel LEDs

Name	Color	State	Description
ACT	Yellow	Flashing	Flashes according to the Ethernet traffic activity (10/100BaseT connector)
LINK	Green	On	Good link integrity (10/100BaseT connector)

Normal Indications

Upon turning on ASMi-52, the PWR LED in the front panel lights to indicate that ASMi-52 is on. [Table 3-3](#) shows the correct status of the indicators a few seconds after the units were synchronized.

Table 3-3. ASMi-52 Indicator Status

Indicator	Status
PWR	On
TST	Off
ALM	Off
SYNC	On (green)

If the above LED indications do not appear following initial power activation, refer to [Chapter 5](#) for the diagnostic test instructions.

3.3 Default Settings

ASMi-52 is managed by an ASCII terminal or a PC running a terminal emulation program via a menu-driven embedded software. [Table 3-4](#) lists the default settings of the ASMi-52 configuration parameters.

Table 3-4. Default Settings

Type	Parameter	Default Value
System	Clock	Internal
	Sys contact	-
	Sys location	-
	Sys name	-
	Host IP address	0.0.0.0
	Host IP mask	0.0.0.0
	Host default gateway	0.0.0.0
	Read community	public
	Write community	public
	Trap community	public
	SNMP allowed	Access allowed
	Telnet allowed	Access allowed
	WEB allowed	Access allowed
	DTS IP address	0.0.0.0

Type	Parameter	Default Value
	DTS IP mask	0.0.0.0
LAN Configuration	LAN operation mode	Transparent
	Encapsulation CRC	No
	Bridging Mode	Access only
	Aging Timeout	10
	Autonegotiation	Enable
	LAN Rate	1. Single 2-wire – 192 kbps 4-wire – 384 kbps 2. E1+LAN N/A (0 kbps) 3. Serial DTE+LAN N/A (0 kbps)
	Max AutoNeg Capability	100BaseT full duplex mode
Control Port	Control port rate	9600 bps
	Data	8
	Parity	None
	Interface	DCE
	CTS	=RTS
	DSR	ON
	Port control mode	Terminal
	User name	–
	Password	1234
	Pop alarm	OFF
	Security timeout	10 min
	Call Out Mode	None
	Number of retries	1
	Wait for connect	30 sec
	Dial mode	Tone
	Alternate number mode	Disable
	Primary number	–
	Alternate number	–
SHDSL Interface	Transmission mode	Annex B
	Power backoff	Enable
	Snext margin	Disable
	Current margin	Disable
	Asym PSD	Symmetrical

Type	Parameter	Default Value
	Line prob*	Fixed rate Units with a 4-wire line interface support only fixed rate.
	Configured wire	ASMi-52 2-wire = 2w ASMi-52 4-wire = 4w
	Loop attenuation threshold	0
	SNR margin threshold	0
Serial DTE Interface	Rate	Single: 2-wire – 192 kbps 4-wire – 384 kbps Multiplexer: 1. E1+Serial DTE, N/A, 0 kbps 2. LAN+Serial DTE: 2-wire – 192 kbps 4-wire – 384 kbps
	LLB from DTE	Disable
	RLB from DTE	Disable
E1/E1+Ethernet/E1+Serial DTE Interface	Framed mode	Unframed
	Sync	CCITT
	CRC-4	No
	Idle Code	ff
	Units identical settings	Yes
T1 Interface	Framed mode	Unframed
	Line code	B8ZS
	Receive gain	Long
	Interface	DSU
	Transmit signal mask	0 feet
	Fbit configuration	Transparent
	Sync mode	Fast (after 1 sec)
	Idle code	Ff
	Units identical set	Yes

3.4 Configuration and Management Alternatives

After installation, ASMi-52 can be reconfigured using different ports and applications:

- Local out-of-band management via an ASCII terminal or the Easy Config device connected to the RS-232 port. Usually, preliminary configuration of

the system parameters is performed via an ASCII terminal. Once the ASMi-52 host IP parameters are set, it is possible to access it via Telnet, ConfiguRAD, or RADview-Lite for further configuration.

- Remote management via out-of-band 10/100BaseT port or dedicated timeslot. Remote management is performed using Telnet, or ConfiguRAD (RAD's Web-based application), or RADview (RAD's SNMP-based management system).

Managing ASMi-52 via Ethernet Port

ASMi-52 is equipped with an Ethernet/Fast Ethernet port (10/100BaseT) which enables communication with ASMi-52 management subsystem using the IP protocol (see [Figure 3-8](#)). The Ethernet management port is configured for a LAN cross-over connection.

► To prepare ASMi-52 for network management:

1. Connect a LAN network management station to the ASMi-52 Ethernet port designated 10/100BaseT.
2. Configure the host IP parameters of the ASMi-52 unit via an ASCII terminal.
3. Run an SNMP management application, such as RAD's RADview, open a Telnet session, or manage ASMi-52 via ConfiguRAD.

Managing ASMi-52 via a Dedicated Timeslot

ASMi-52 modems with E1 or T1 interface can be managed via a dedicated E1/T1 timeslot (DTS) (see [Figure 3-8](#)).

The DTS is a management channel that connects directly to the ASMi-52 host using a separate IP interface, i.e., separate IP address and IP mask. If the LAN and dedicated timeslot services are configured to have the same IP, the management session over the dedicated timeslot has priority over management via the 10/100BaseT port.

1. Connect the E1/T1 line to the ASMi-52 E1 or T1 port.
2. Start a terminal management session and do the following:
 - Assign an IP address and an IP mask to the dedicated timeslot interface
 - Enable DTS management
 - Assign an E1/T1 timeslot for the management traffic.
3. Run an SNMP management application, such as RAD's RADview, open Telnet session, or manage ASMi-52 via ConfiguRAD.

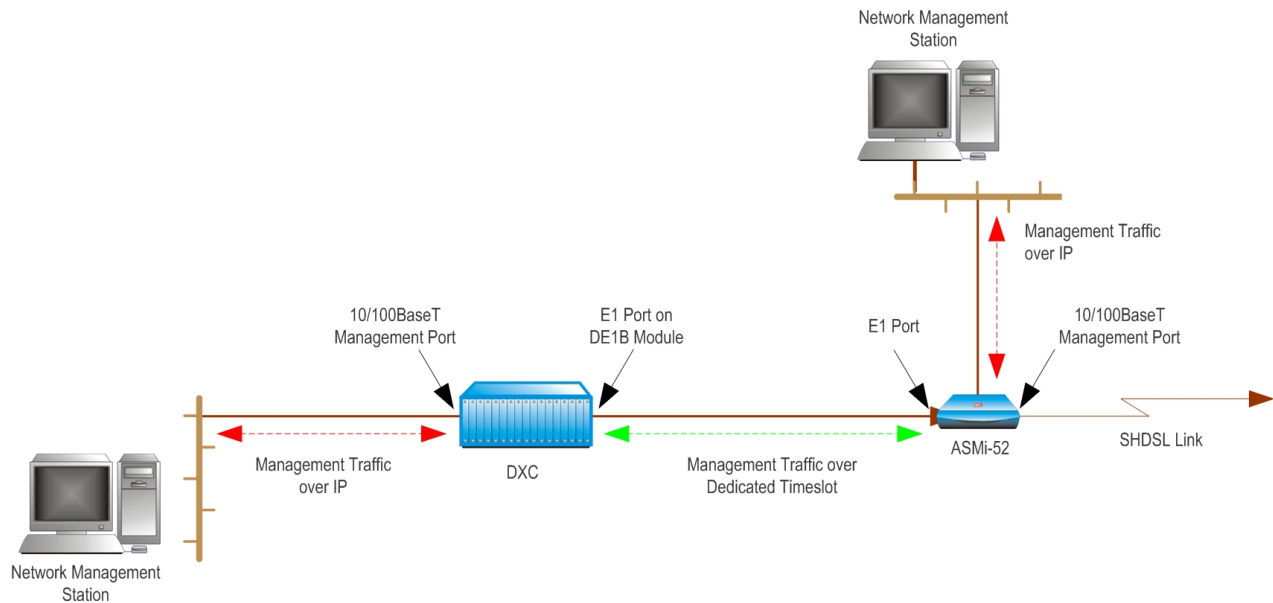


Figure 3-8. Managing ASMi-52 via LAN Port and a Dedicated Timeslot

Working with Terminal

This section describes how to prepare ASMi-52 and the supervisory terminal for a control session.

Control Port Interface Characteristics

ASMi-52 includes a V.24 (RS-232) asynchronous DCE port, designated as CONTROL and terminating in a 9-pin D-type female connector. The control port continuously monitors the incoming data stream and immediately responds to any input string received through this port.

The terminal can be connected either directly to the ASMi-52 control port, or through a modem or any other type of full-duplex data link. The ASMi-52 control port interface type must be set in accordance with the connection method, as follows:

DCE – direct connection to terminals. Since terminals usually have DTE interfaces, the connection to the port is made by means of a cable.

DTE – connection through a modem or data link. In this case, you need a cross-cable (also called a null modem cable) to connect to the CONTROL connector.

The ASMi-52 control port can be configured to communicate at the following rates: 9.6, 19.2, 38.4, 57.6, or 115.2 kbps.

The word format consists of one stop bit, 8 data bits, and no parity.

Note

ASMi-52 can also be managed via a hand-held control device, Easy Config. Refer to Appendix C for detailed description of the device.

Preparing the Terminal

Any standard ASCII terminal (a “dumb” terminal or a personal computer running a terminal emulation application) equipped with a V.24 (RS-232) communication interface can be used to configure ASMi-52. Appendix A details the pin assignments and control signal directions of the ASMi-52 control connector.

Data Terminal Ready (DTR)

When connected and turned on, the terminal sets the DTR line ON (active) to gain control over ASMi-52 and starts a configuration or monitoring session.

Initiating a Control Session

► To initiate a control session:

1. Connect the terminal cable to the CONTROL connector of ASMi-52.
2. Turn the control terminal on.
3. Configure the terminal to the default communication parameters: 9.6 kbps, one start bit, eight data bits, no parity, one stop bit, VT100 emulation.
4. Select the full-duplex mode.
5. Turn the terminal echo off.
6. Disable any type of flow control.

You are now ready to start a control session.

Navigating the Management Menus

This section provides a general description of the software menu operation and conventions for navigating the menus.

Choosing Options

► To choose an option:

- Type the number corresponding to the option, and press **<Enter>**.

The screen for the selected option is displayed.

Note

*When a menu option has only two values, typing the option number and pressing **<Enter>** will scroll between the available values.*

Some of the ASMi-52 menus have a 'Save' option. When choosing options from these menus, confirm your choice by typing the number corresponding to the 'Save' option, otherwise your entry will be ignored.

Correcting Entries

► To correct an erroneous entry:

Press **<Backspace>** to clear the error, then enter the correct characters.

or

Press **<Esc>** to exit the current menu, and then return to the menu to re-enter the required value.

Navigating Data Forms

Some of the ASMi-52 management software screens are data forms, which are bigger than regular menus and require scrolling to navigate between parameters. For example, the Inventory screen or Manager List menu are considered data forms.

Use the following keys (case-sensitive) for the data form navigation:

- **L** – move left, **l** – scroll left,
- **R** – move right, **r** – scroll right
- **U** – move up, **u** – scroll up
- **D** – move down, **d** – scroll down
- **<Tab>** – select next changeable cell.

Note

*You can display these navigation keys by typing **< ? >** from a data form.*

Ending a Terminal Configuration Session

➤ To end the current terminal session:

- Type **&**.

After a session is ended, it is necessary to enter again a valid user name and password to start a new session.

Verifying the Application Software Version

Before continuing the management session, verify that the unit is running version 2.8 of the application software.

➤ To verify the application software version:

1. From the Main menu, select **Inventory**.
2. In the Inventory screen verify that that the Application version field displays 2.8x.
3. If the application software version is 2.8x, proceed to [Chapter 4](#) for further instructions on how to configure the unit for management and operation.
4. If displayed number is below 2.8x, see [Chapter 6](#) for software upgrade instructions.

Working with Web Terminal

Web Browser Requirements

The following Web browsers can be used to access the ASMi-52 supervision utility from any location that enables access to the ASMi-52 using Internet protocols.

- Internet Explorer 6.0 and up, running on Windows™
- Netscape Communicator 7.0 and up, running on Windows™, HPOV or Linux

- Firefox 1.0.4 and up, running on Windows™
- Mozilla 1.4.3 and up, running on Linux.

However, before using Web access, it is necessary to perform a preliminary configuration of ASMi-52.

When using a Web browser, pay attention to the following points:

- Enable scripts
- Configure the firewall that is probably installed on your PC to allow access to the destination IP address
- Disable pop-up blocking software (such as Google Popup Blocker); you may also have to configure your spyware/adware protection program to accept traffic from/to the destination IP address
- Browsers store the last viewed pages in a special cache. To prevent configuration errors, it is absolutely necessary to flush the browser's cache whenever you return to the same screen.

Working with ConfiguRAD

ConfiguRAD is a Web-based remote access terminal management software. It provides a user-friendly interface for configuring, collecting statistics, and performing diagnostic tests on the ASMi-52 units.

► To start the ConfiguRAD session:

1. Start a Web browser.
2. Disable any pop-up blocking software, such as the Google Popup Blocker.
3. Enter the IP address of the ASMi-52 in the address field of the browser in the following format: **http://<IP address>** and then press **<Enter>** to command the browser to connect (**IP address** stands for the actual ASMi-52 IP address which has to be assigned via an ASCII terminal).
4. In the Login screen, click **LOGIN** to start the ConfiguRAD management session.



Figure 3-9. ConfiguRAD Login

► To choose an option:

1. Click a link in the ConfiguRAD screen to display the next menu.

2. Once the target screen is displayed, select a value from the drop-down box or enter a value in a text box.

Some of the ASMi-52 menus have a 'Save' option. When choosing options from these menus, you must confirm your choice by selecting 'Save', otherwise your entry will be ignored.

At the left-hand bottom corner, ConfiguRAD provides some auxiliary management tools:

Status – shows the number of users currently managing ASMi-52

Trace – opens an additional pane for system messages, progress indicators (ping, software and configuration file downloads) and alarms. It is recommended to keep the trace pane open all the time.

Refresh All – refreshes all screen elements.

➤ **To end the current session:**

In the Main menu, click **Logout**.

Note

- *ASMi-52 allows at least four management sessions to be active at a time. If the Web-based management sessions were not ended properly (for example, by closing the Web browser window), you have to wait five minutes before attempting the next log-in. If you try to log in during the five-minute security timeout, ASMi-52 does not allow to proceed to the Main menu, displaying 'Too Many Users' message. Likewise, the Web-based management session cannot be initiated, if a terminal or Telnet session is still in progress.*
- *One session is always reserved as a terminal session from the four available management sessions, the other three sessions can be a ConfiguRAD or Telnet sessions. The four sessions can function at the same time.*

Working with RADview

RADview-EMS/TDM is a user-friendly and powerful SNMP-based application for management and service provisioning. It offers pseudowire service provisioning, as well as embedded element management capabilities.

RADview-EMS/TDM provides a dedicated graphical user interface (GUI) for monitoring RAD products via their SNMP agents. RADview agent for ASMi-52 is bundled in the RADview-EMS package for PC (Windows-based) or Unix.

For more details about this network management software, and for detailed instructions on how to install, set-up and use RADview – contact your local distributor or refer to the RADview-EMS documentation.

Working with SNMP

ASMi-52 can be managed via a third-party SNMP-based NMS (refer to [Chapter 6](#) for trap list).

Menu Map

The following is the menu map of the ASMi-52 management software.

Note *Some of the management menu options depend on the type of the DTE interface installed in ASMi-52:*

- *DTS Configuration (Main menu > Configuration > System Configuration > Management) is available only for the units with E1 or T1 interface.*
 - *LAN Rate (Main menu > Configuration > LAN Configuration > Local LAN Configuration) is available for the units with the user's 10/100BaseT port.*
 - *Data Rate (Main menu > Configuration > DTE Configuration > DTE Remote Port) is available for the units with a serial DTE interface.*
 - *E1 Configuration (Main menu > Configuration) is available for the units with an E1 local port.*
 - *Figure 3-10 illustrates software menus of the unit that operates with SHDSL repeater in the line.*
-

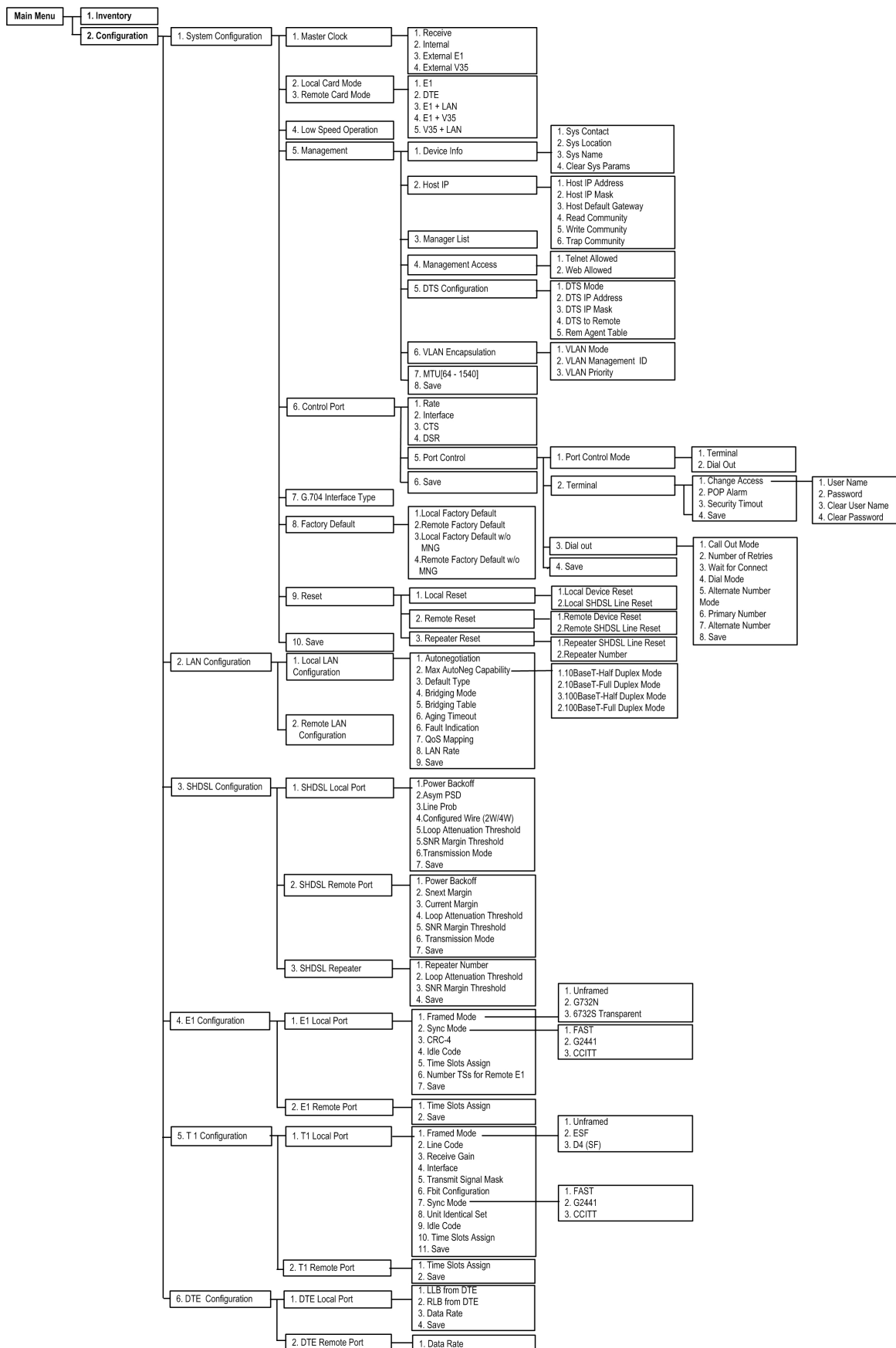


Figure 3-10. Inventory and Configuration Menus

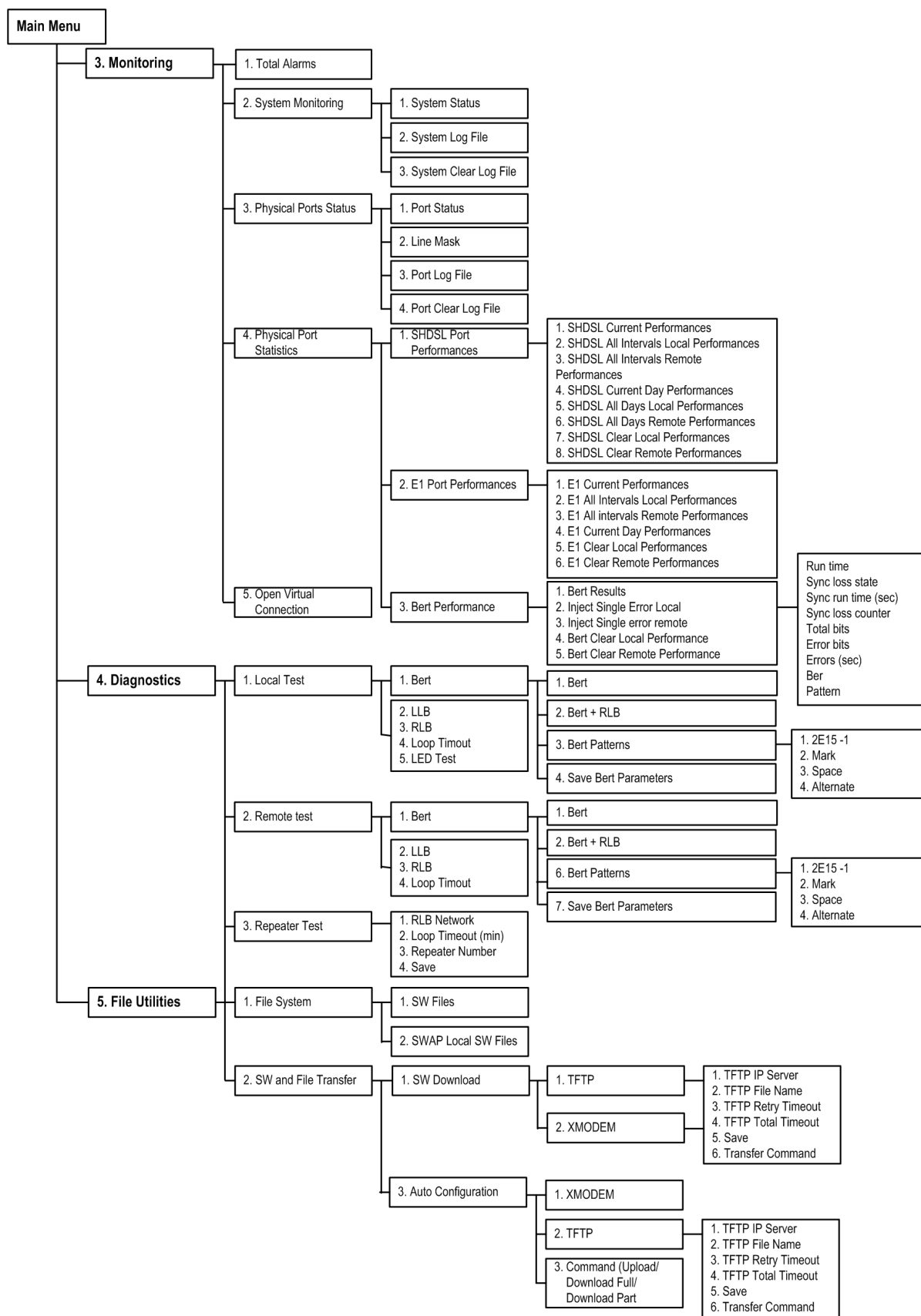


Figure 3-11. Monitoring, Diagnostics and File Utilities Menus

3.5 Turning Off ASMi-52

- To turn off ASMi-52:
 - Remove the power cord from the power source.

Chapter 4

Configuration

4.1 Configuring ASMi-52 for Management

The configuration of ASMi-52 is performed via a menu-driven embedded software, using a standard ASCII terminal or a PC running a terminal emulation application connected to the rear panel CONTROL port. Alternatively, ASMi-52 can be managed from a Telnet host connected to the 10/100BaseT port on the rear panel.

Configuring Management Parameters

You must define the ASMi-52 internal SNMP agent parameters in order to enable SNMP and Telnet management (see [Figure 4-1](#)). You can also enter additional information about your ASMi-52, such as the name of the contact person detail, unit location, etc.

► To access the Management menu:

- From the System Configuration menu, select **Management** (Main menu > Configuration > System Configuration > Management).

The Management menu appears ([Figure 4-1](#)).

ASMi-52		
<u>Management</u>		
Device Info		>
Host IP		>
Manager List		>
Management Access		>
DTS Configuration		>
VLAN Encapsulation		>
MTU (64 - 1540)	...	(1540)
Save		
>		
ESC-prev.menu; !-main menu; &-exit; @-scroll		

Figure 4-1. Management Menu

Notes *DTS Configuration is available only for the units with the E1/T1 DTE interfaces.
MTU means Maximum Transfer Unit.*

Entering Device Information

The Device Information menu allows you to assign a name to ASMi-52, define its location, and contact person. These entries may include up to 20 characters.

➤ **To enter device information:**

1. Display the **Sys Contact** menu (Main menu > Configuration > System Configuration > Management > Device Info > Sys Contact) and enter the name of a contact person.
2. Display the **Sys Location** menu (Main menu > Configuration > System Configuration > Management > Device Info > Sys Location) and enter the description of the ASMi-52 location.
3. Display the **Sys Name** menu (Main menu > Configuration > System Configuration > Management > Device Info > Sys Name) and enter the name of the unit.
4. Press <Esc> to return to the Management menu (see [Figure 4-1](#)).
5. From the Management menu, select **Save** to save your changes.

➤ **To clear system parameters:**

1. From the Device Info menu, select **Clear Sys Params** (Main menu > Configuration > System Configuration > Management > Device Info > Clear Sys Params).

ASMi-52 displays the following message:

```

                                     ASMi-52
Clear sys params
Are you sure !!! Clear (Y/N)

>

ESC-prev. menu; !-main menu; &-exit; @-scroll
```

Figure 4-2. Clear Sys Params Prompt

2. Type **Y** to confirm the deletion.

ASMi-52 deletes all device info parameters.

ASMi-52	
<u>Device Info</u>	
Sys description	ASMi-52 SA HW Version: 0.00, SW Version: 2.01E24)
Sys contact	(sss)
Sys location	()
Sys name	()
Clear sys params	
>	
ESC-prev. menu; !-main menu; &-exit; @-scroll	

Figure 4-3. Device Information Menu

Configuring the Host Parameters

ASMi-52 can be managed by a network management station, which is located on the LAN connected to the 10/100BaseT port. In order to establish a proper connection, it is necessary to configure the following: host IP address, subnet mask, default gateway, its trap, read, and write communities.

► To define the IP parameters:

- From the Host IP menu (Main menu > Configuration > System Configuration > Management > Host IP), type the following:
 - 1 to define the host IP address
 - 2 to define the subnet mask
 - 3 to set the default gateway IP address
 - 4 to enter the name of a community with read-only authorization
 - 5 to enter the name of a community with write authorization
 - 6 to enter the name of a community to which ASMi-52 will send traps.
- Press <Enter>.
- Press <Esc> to return to the Management menu (see [Figure 4-1](#)).
- From the Management menu, select **Save** to save your changes.

ASMi-52	
<u>Host IP</u>	
Host IP address	(172.17.161.73)
Host IP mask	(255.255.255.0)
Host default gateway	(172.17.161.1)
Read community	(public)
Write community	(public)
Trap community	(public)
>	
ESC-prev. menu; !-main menu; &-exit; @-scroll	

Figure 4-4. Host IP Menu

Configuring the Network Managers

Define or modify the network management stations to which the SNMP agent of ASMi-52 will send traps. Up to ten managers can be defined. Entering the IP address and corresponding subnet mask to define each management station.

► **To configure the network managers:**

1. Display the **Manager List** menu. (Main menu > Configuration > System Configuration > Management > Manager List).

The Manager List menu appears (see [Figure 4-5](#)).

2. From the Manager List menu, type a number corresponding to the network management station that you intend to define or modify, and enter its new IP address.
3. Type a number corresponding to a subnet mask of the already defined network management station, and enter a new value.
4. Repeat step 2 and step 3 to define additional management stations.
5. Press <Esc> to return to the Management menu (see [Figure 4-1](#)).
6. From the Management menu, select **Save** to save your changes.

ASMi-52			
Manager List			
1. MNG 1	IP	...	(172.17.160.104)
2. MNG 2	IP	...	(172.17.160.68)
3. MNG 3	IP	...	(0.0.0.0)
4. MNG 4	IP	...	(0.0.0.0)
5. MNG 5	IP	...	(0.0.0.0)
6. MNG 6	IP	...	(0.0.0.0)
7. MNG 7	IP	...	(0.0.0.0)
8. MNG 8	IP	...	(0.0.0.0)
9. MNG 9	IP	...	(0.0.0.0)
10. MNG 10	IP	...	(0.0.0.0)
11. MNG 1	MASK	...	(0.0.0.0)
>			
ESC-prev. menu; !-main menu; &-exit; @-scroll			

Figure 4-5. Manager List Menu

Controlling the Management Access

You can enable or disable access to the ASMi-52 management system via Telnet or a Web-based application (ConfiguRAD). By disabling Telnet, you prevent unauthorized access to the system when security of the ASMi-52 IP address has been compromised. When Telnet and Web access are disabled, ASMi-52 can be managed via an ASCII terminal only.

► To define the management access method:

1. From the **Management Access** menu (Main menu > Configuration > System Configuration > Management > Management Access), (see [Figure 4-6](#)), select **Telnet Allowed** to enable Telnet access, or select **Web Allowed** to enable management via a Web browser.

The access value toggles between **Access Allowed** and **No Access**.

2. Press **<Enter>** when a required value is displayed.
3. Press **<Esc>** to return to the Management menu (see [Figure 4-1](#)).
4. From the Management menu, select **Save** to save your changes.

```

ASMi-52
Management Access
TELNET allowed          (access allowed)
WEB allowed             (access allowed)
>
ESC-prev. menu; !-main menu; &-exit; @-scroll

```

Figure 4-6. Management Access Menu

Configuring Dedicated Timeslots

ASMi-52 units with an E1 or T1 port support management via a dedicated timeslot.

A remote E1 device can be managed via DTS if the DTS mode is enabled in both the CO unit and the CPE unit. The MNG timeslot is transferred over the SHDSL to the E1 CPE, the CPE forwards the MNG timeslot over the E1 line to the next device in the chain.

Note

Allocate the same timeslot number for MNG in all devices in the chain. With DTS mode enabled in all devices, the chain can be managed remotely from one NMS.

In T1 systems, the DTS manages the local unit only; it is not forwarded over SHDSL.

► To configure dedicated timeslots:

1. From the **DTS Configuration** menu (Main menu > Configuration > System Configuration > Management > DTS Configuration), configure the dedicated timeslot in the following order (see [Figure 4-7](#)):
 - Assign a DTS IP address
 - Assign a DTS IP mask
 - Enable the DTS mode.
2. Check the status of the DTS configuration in the Rem Agent Table (see [Figure 4-8](#)).
3. From the Management menu, select **Save** to save the changes.

In the Map Timeslot menu (*Figure 4-30*), the dedicated timeslot value changes to MNG (management).

ASMi-52	
<u>DTS Configuration</u>	
DTS Mode	(DISABLE)
1. DTS to CPE	(ON)
2. DTS IP address	... (0.0.0.0)
3. DTS IP mask	... (0.0.0.0)
4. Rem Agent Table	[] >
>	
ESC-prev.menu; !-main menu; &-exit; @-scroll	

Figure 4-7. DTS Configuration Menu

ASMi-52		
<u>Rem Agent Table</u>		
SOURCE IP	DESTINATION IP	PORT
>		
ESC-prev. menu; !-main menu; &-exit; @-scroll; ?-help		

Figure 4-8. Rem Agent Table

Configuring VLAN Encapsulation

ASMi-52 is occasionally connected to a VLAN network when management VLAN messages are required. Virtual LANs enable network managers to group users logically rather than by physical location. A virtual LAN (VLAN) is an emulation of a standard LAN that allows data transfer and communication to occur without the traditional restraints placed on the network.

The VLAN encapsulation feature enables or disables a user to work in VLAN mode, identify the user to give the user the proper VLAN permissions and to prioritize a VLAN session.

► To enable VLAN mode:

1. From the Management menu (Main menu > Configuration > System Configuration > Management > VLAN Encapsulation), select **VLAN Encapsulation** (see *Figure 4-9*).

The VLAN Encapsulation is displayed.

2. From the VLAN Encapsulation menu, select **VLAN mode**.
3. Enable the VLAN mode feature.
4. Select **VLAN Management ID** to identify the user.

The identification will grant the user VLAN support.

5. Select the **VLAN Priority** option if you wish to prioritize the session.

```

                                ASMi-52
VLAN Encapsulation
1. Host Tagging                      (UNTAGGED)
2. VLAN management ID [1 - 4094]      (1)
3. VLAN priority (0-7)                (0)
>
ESC-prev. menu; !-main menu; &-exit; @-scroll

```

Figure 4-9. VLAN Encapsulation Menu

Configuring Control Port Parameters

The embedded ASMi-52 software enables you to configure the Control port parameters.

➤ **To access the Control port menu:**

- From the System Configuration menu, select **Control Port** (Main menu > Configuration > System Configuration > Control Port).

The Control Port menu appears (see [Figure 4-10](#))

```

                                ASMi-52
Control Port
Rate                      >(9600 bps)
Interface                  (DCE)
CTS                        (=RTS)
DSR                        (DTR)
Port Control               >
Save

>

ESC-prev. menu; !-main menu; &-exit; @-scroll

```

Figure 4-10. Control Port Menu

Changing the Control Port Data Rate

The control port of ASMi-52 supports different data rates that can be configured via the Rate menu (see [Figure 4-11](#)).

➤ **To configure the control port data rate:**

- From the Control Port menu, select **Rate** (Main menu > Configuration > System Configuration > Control Port > Rate).

The Rate menu appears (see [Figure 4-11](#)).

- Select the terminal rate by typing the number corresponding the required value, and press **<Enter>**.
- Select **Save** to save the changes.

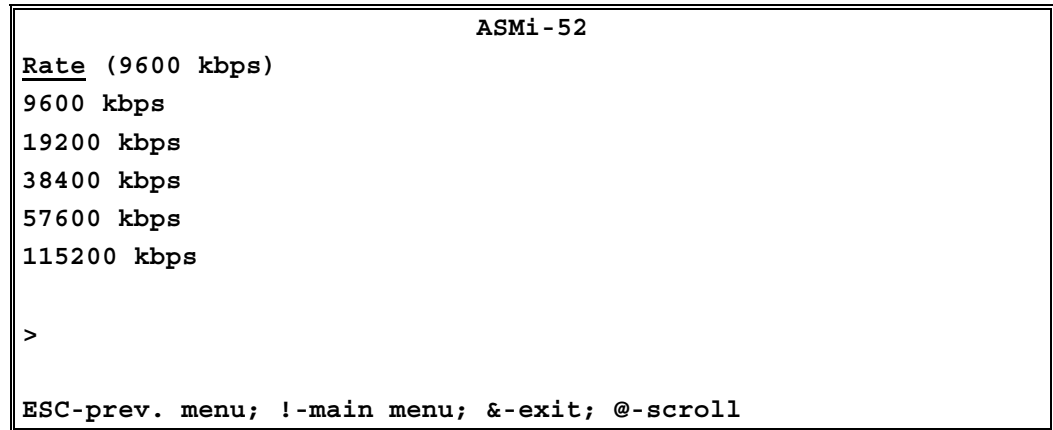


Figure 4-11. Control Port Rate Menu

Selecting the Control Port Interface

► To select the control port interface:

1. From the Control Port menu, select **Interface** (Main menu > Configuration > System Configuration > Control Port > Interface) to choose the control port interface: **DCE** (direct connection to the terminal via a straight cable) or **DTE** (terminal connection via modem or data link).

The display is refreshed and the new value appears.

2. Select **Save** to save the changes.

Selecting the CTS State

► To select the CTS state:

1. From the Control Port menu, select **CTS** (Main menu > Configuration > System Configuration > Control Port > CTS) to choose the CTS state: **ON** (constantly ON) or **=RTS** (follows the RTS line).

The display is refreshed and a new value appears.

2. Select **Save** to save the changes.

Selecting the DSR State

► To select the DSR state:

1. From the Control Port menu, select **DSR** (Main menu > Configuration > System Configuration > Control Port > DSR) to choose the DSR state: **ON** (constantly ON) or **DTR** (follows the DTR line).

The display is refreshed and a new value appears.

2. Select **Save** to save the changes.

Configuring the Terminal Port

The Port Control menu allows you to do the following:

- Set the port mode (terminal or dial out)

- Manage the user name and password
- Enable or disable pop-up alarms
- Define security timeout
- Configure dial-out parameters.

► **To access the Port Control menu:**

- From the Control Port menu, select **Port Control** (Main menu > Configuration > System Configuration > Control Port > Port Control).

The Port Control menu appears (see [Figure 4-12](#)).

```

                                ASMi-52
Port Control
Port Control Mode          > (Terminal)
Terminal                  >
Dial out                  >
Save
>
ESC-prev. menu; !-main menu; &-exit; @-scroll

```

Figure 4-12. Port Control Menu

Configuring the Port Control Mode

The Control port of ASMi-52 operates in one of the following modes:

- Terminal – direct connection to the control terminal (DCE mode) or to the modem (DTE mode)
- Dial-out – connection to a dial-out modem for alarm reporting

Note

Currently, the connection to ASMi-52 via SLIP is disabled.

► **To configure port control mode:**

1. From the Port Control menu, select **Port Control Mode** (Main menu > Configuration > System Configuration > Control Port > Port Control > Port Control Mode).

The Port Control Mode menu appears (see [Figure 4-13](#)).

```

                                ASMi-52
Port Control Mode (Terminal)
Terminal
Dial out
>
ESC-prev.menu; !-main menu; &-exit; @-scroll

```

Figure 4-13. Port Control Mode Menu

2. From the Port Control Mode menu, select the required operation mode.
3. From the Port Control menu, select **Save** to save the change.

Configuring User Name, Password, Pop-up Alarms and Security Timeout

The user name, password, pop-up alarms and security timeout are configured via the Terminal menu.

► To access the Terminal menu:

- From the Port Control menu, select Terminal (Main menu > Configuration > System Configuration > Control Port > Port Control > Terminal).

The Terminal menu appears (see *Figure 4-14*).

ASMi-52	
<u>Terminal</u>	
Change access	>
POP ALARM	(No)
Security timeout	(10 min)
Save	
>	
ESC-prev. menu; !-main menu; &-exit; @-scroll	

Figure 4-14. Terminal Menu

► To change the user name and password:

1. From the Terminal menu, select **Change Access** (Main menu > Configuration > System Configuration > Control Port > Port Control > Terminal > Change Access).

The following dialog appears:

ASMi-52	
<u>Change Access</u>	
User name	... ()
Password...	
Clear User Name	...
Clear Password	...
>	
ESC-prev. menu; !-main menu; &-exit; @-scroll	

Figure 4-15. Change Access Menu

2. Select **User Name** to enter a new user name; select **Password** to enter a new password; select **Clear User Name** to delete the current user; or **Clear Password** to delete the current password.
3. Enter a new user name or password and press **<Enter>**.

The Terminal menu appears.

4. From the Terminal menu, select **Save** to save the changes.

➤ **To enable or disable the pop-up alarms:**

When the pop-up function is enabled, ASMi-52 displays the active alarms at the bottom of the terminal screen. When the faulty condition causing the alarm is cleared, the alarm is removed from the screen

1. From the Terminal menu, select **Pop Alarm** (Main menu > Configuration > System Configuration > Control Port > Port Control > Terminal > Pop Alarm) to choose the pop-up alarms mode: **ON** (pop-up alarms are enabled) or **OFF** (pop-up alarms are disabled).

The display is refreshed and the new value appears.

2. Select **Save** to save the changes.

➤ **To configure the security timeout:**

1. From the Terminal menu, select **Security Timeout** (Main menu > Configuration > System Configuration > Control Port > Port Control > Terminal > Security Timeout) to configure the timeout: **FOREVER** (timeout is disabled) or **10 MIN** (idle disconnect time – 10 min).

The display is refreshed and a new value appears.

2. Select **Save** to save the changes.

➤ **To change the dial-out parameters:**

When the CONTROL port is configured to the dial out mode, you must specify the dial-out parameters of the port. This enables ASMi-52 to build the call command that is sent to the dial-out modem. When connecting the dial-out modem, you must use a cross cable (see [Appendix A](#) for the cross cable pinout).

The modem connected to the CONTROL connector must be set up as follows (for convenience, the Hayes commands required to select the specified parameters are listed in brackets):

- Auto-answer mode (**AT S0=1** and **AT S1=1**)
- Call set up in response to the **CONNECT** string (**AT X0**)
- No echo (**AT E0**)
- Verbose mode (no codes, e.g., **CONNECT** string instead of 0) (**AT V1**).

1. From the Port Control menu (see [Figure 4-12](#)), select **Dial out** (Main menu > Configuration > System Configuration > Control Port > Port Control > Port Control Mode > Dial Out).

The Dial Out menu appears (see [Figure 4-16](#)).

2. From the Dial Out menu, type the following:
 - **1** to instruct ASMi-52 to report all alarms (**ALL**), only major ones (**MAJOR**), or disable alarm reporting (**NONE**).
 - **2** to specify the number of dialing retries. **0**, no redialing attempts are made if the call is not established on the first attempt. **1–8**, if the call is

not established on the first attempt, ASMi-52 makes the specified number of redials.

This parameter applies to both primary and alternate numbers:

- If the call is not established after dialing the primary directory number the specified number of times, ASMi-52 attempts to establish the call by dialing the alternate directory number (provided the use of an alternate number is enabled).
- If the call is not established within the specified number of redialing attempts on neither of the two directory numbers, ASMi-52 stops the call attempts. When a new alarm report must be sent, the call attempts are started again. The user is notified that the call attempts failed by a message recorded in the alarm log file (separate messages are provided for each directory number).
- **3** to specify the time (in sec) ASMi-52 waits for an answer after each dialing attempt. If the called station does not answer within the specified time, ASMi-52 disconnects. If additional call attempts are allowed, ASMi-52 redials immediately after disconnecting. The available selections are **30**, **45**, or **60** seconds.
- **4** to select the dialing mode. **TONE**, if the dial-out modem is instructed to use DTMF dialing. **PULSE**, if the dial-out modem is instructed to use pulse dialing.
- **5** to control the use of an alternate number. The alternate number is dialed after the specified number of call attempts on the primary number failed.
ENABLE, the use of an alternate number is enabled. **DISABLE**, ASMi-52 stops the call attempts after the specified number of call attempts on the primary number failed.
- **6** to specify a primary number to dial.
- **7** to specify an alternate number to dial.

3. Select **Save** to save the changes.

ASMi-52	
<u>Dial out</u>	
Call Out Mode	(None)
Number of Retries [0-8]	(1)
Wait for connect (sec)	(30 sec)
Dial mode	(Tone)
Alternate number mode	(Disable)
Primary number ()	
Alternate number	()
Save	
>	
ESC-prev. menu; !-main menu; &-exit; @-scroll	

Figure 4-16. Control Port Dial Out Menu

4.2 Configuring for Operation

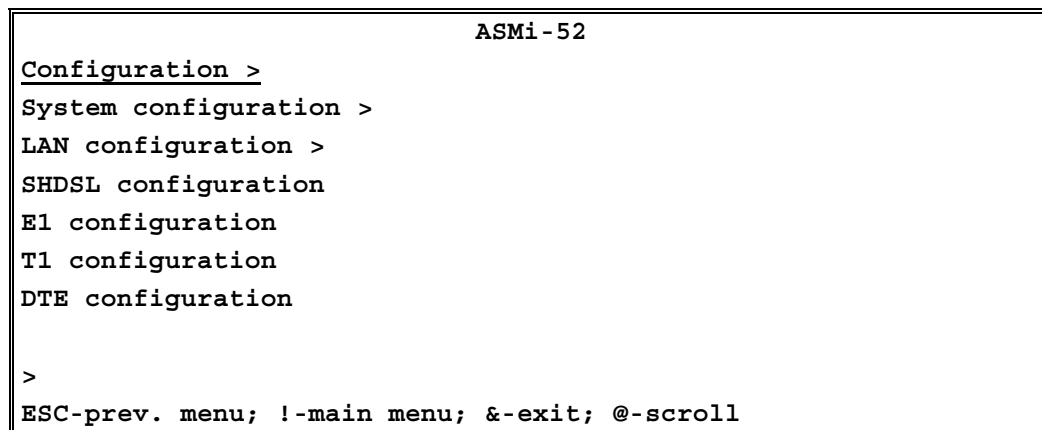
Configuring ASMi-52 System Parameters

This section describes the procedures for configuring system parameters of ASMi-52.

➤ **To access the Configuration menu:**

- From the Main menu, select **Configuration**.

The Configuration menu appears (see [Figure 4-17](#)).



```
ASMi-52
Configuration >
System configuration >
LAN configuration >
SHDSL configuration
E1 configuration
T1 configuration
DTE configuration

>
ESC-prev. menu; !-main menu; &-exit; @-scroll
```

Figure 4-17. Configuration Menu

The ASMi-52 management software allows you to perform the following:

- Configuring master clock
- Selecting a local/remote card mode
- Configuring the local/remote card
- Enabling or disabling low speed operation
- Defining management parameters (IP parameters, system information, etc.)
- Defining control port parameters
- Resetting ASMi-52 defaults
- Performing the overall reset of the device or resetting its SHDSL interface.

➤ **To display the System Configuration menu:**

- From the Configuration menu, select **System Configuration**.

The System Configuration menu appears (see [Figure 4-18](#)).

```

ASMi-52
System Configuration >
Master clock                >(Internal)
Local Card Mode
Remote Card Mode
Low Speed Operation         (Enable/Disable)
Management                  >
Control port                >
Factory default             >
Reset                       >
Save

>
ESC-prev.menu; !-main menu; &-exit; @-scroll

```

Figure 4-18. System Configuration Menu

Configuring the Master Clock

ASMi-52 modems support receive, external and internal clock modes.

When configured to the internal or external clock, ASMi-52 modem operates as an STU-C unit. When configured to the receive clock, ASMi-52 operates as an STU-R unit.

► To configure the master clock:

1. From the Master Clock menu (Main menu > Configuration > System Configuration > Master Clock), select the appropriate clock by choosing **Receive**, **Internal**, **External E1** or **External IR** (see [Figure 4-19](#)).

The System Configuration menu returns.

2. From the System Configuration menu, select **Save** to save the changes.

```

ASMi-52
Master clock (Internal)
Receive
Internal
External E1
External IR

>

ESC-prev. menu; !-main menu; &-exit; @-scroll

```

Figure 4-19. Master Clock Menu

Configuring Local/Remote Card Mode

Each multiplexer unit may be configured as a single parameter by the local/remote card mode. For example, E1 + Serial DTE Interface may be configured as E1 or as Serial DTE. The multiplexer can be configured as single but it will not have the characteristics of a multiplexer unit.

For available options and combinations of parameters that complies with multiplexer conditions, see [Table 1-4](#).

Local Card Mode

➤ **To configure local card mode:**

1. From the Local menu (Main menu > Configuration > System Configuration > Local Card Mode), select the appropriate configuration by choosing **E1**, **DTE**, **E1 + LAN**, **E1 + V35**, or **V35 + LAN** (see [Figure 4-20](#)).

The System Configuration menu returns.

2. From the System Configuration menu, select **Save** to save the changes

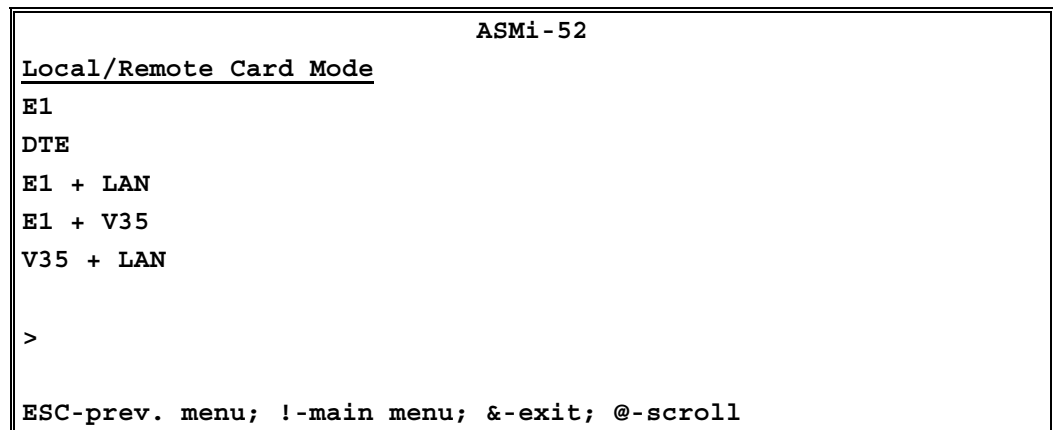


Figure 4-20. Local/Remote Card Mode Menu

Remote Card Mode

The remote card mode configuration option is only available when ASMi-52 is connected to a remote unit. When connected to a remote unit, each multiplexer unit can be configured to work as a single unit. For example, E1+Serial DTE, E1 single, or Serial DTE single may be configured as an E1 or Serial DTE unit. A multiplexer unit configured as a single unit does not behave as a multiplexer unit. The following applies in remote card mode configuration.

- DTE Serial Interface as a single unit
- E1 as a single unit
- E1+Serial DTE as a multiplexer unit.

➤ **To configure remote card mode:**

1. From the Remote menu (Main menu > Configuration > System Configuration > Remote Card Mode), select the appropriate configuration by choosing **E1**, **DTE**, **LAN**, **E1 + LAN**, **E1 + V35**, or **V35 + LAN** (see [Figure 4-20](#)).

The System Configuration menu returns.

2. From the System Configuration menu, select **Save** to save the changes

Configuring Low Speed Operation

ASMi-52 can be configured to work at a speed of 64/128 kbps (2-wire) and 64/128/192/256 kbps (4-wire) when operating opposite devices with E1 DTE

interface. The maximum data rate of ASMi-52 working in low speed mode is 2048 kbps.

➤ **To enable the low speed operation:**

1. From the System Configuration, select **Low Speed Operation** (Main menu > Configuration > System Configuration > Low Speed Operation).

The option value changes to Enable or Disable.

2. From the System Configuration, select **Save** to save the change.
3. Reset the ASMi-52.

On start up the unit will operate in low speed mode.

Note

Low speed operation is not available in multiplexed operations.

Setting the G.704 Interface Type

The G.704 interface type refers to the remote side hardware and is applicable for E1 only.

➤ **To set the G.704 interface type:**

1. From the System Configuration menu, select **G.704 Interface Type**.
2. Select one of the following values as required:
 - Autodetect
 - Balanced
 - Unbalanced

Configuring the Physical Ports

Configuring the SHDSL Interface

The ASMi-52 configuration software allows you to change the modem's transmission mode (Annex A or Annex B).

Examples given below illustrate the local device configuration procedures.

➤ **To change the transmission mode:**

1. From the SHDSL Local Port menu, select **Transmission Mode** (Main menu > Configuration > SHDSL Configuration > SHDSL Local Port > Transmission Mode) to choose a transmission mode: Annex A or Annex B for the SHDSL Local Port.

The display is refreshed and a new value appears.

2. Select **Save** to save the changes.

Note

ASMi-52 units operating in the receive clock mode automatically detect the standard compatibility value of the central units and configure themselves accordingly.

```

ASMi-52
SHDSL local port configuration
Power backoff                      (Enable)
Asym PSD                          (Symmetric)
Line prob                         (Fixed rate)
Configured Wire                   (2W/4W)
Loop attenuation threshold (dB) [0 - 127] (0)
SNR margin threshold (dB) [0 - 15]      (0)
Transmission mode                 (Annex_A)
Save

>

ESC-prev. menu; !-main menu; &-exit; @-scroll

```

Figure 4-21. SHDSL Local Port Menu

```

ASMi-52
SHDSL remote port configuration
Transmission mode                 (Annex_AB)
Asym PSD                          (Asym/Sym Enable)
Line prob                         (Adaptive rate)
Power backoff                     (Enable)
Snext margin                     (Disable Snext margin)
Current margin                   (Disable current margin)
Loop attenuation threshold (dB) [0-127] (0)
SNR margin threshold (dB) [0-15]      (0)
Save

>

ESC-prev. menu; !-main menu; &-exit; @-scroll

```

Figure 4-22. SHDSL Remote Port Configuration Menu

Configuring the Power Backoff

You can determine if the transmitted power backoff is used.

- To configure the use of the power backoff:
 1. From the SHDSL Local Port/SHDSL Remote Port menu, select **Power backoff** (Main menu > Configuration > SHDSL Configuration > SHDSL Local Port/SHDSL Remote Port > Power Backoff) (see [Figure 4-21](#) and [Figure 4-22](#)) to enable or disable power backoff:
 - **Disabled** – the transmission power is 13.5 dBm on each 2W line as long as the SHDSL bitrate is less than 2.048 Mbps and 14.5 dBm on each 2W line as long as the SHDSL bitrate is greater or equal to 2.048 Mbps

- **Enabled** – Adaptive mode. The transmission power is between 13.5 to 14.5 dBm and the transmitter will use this range for the optimal transmission according to the line conditions and bitrates. This setting enables the modems to transmit at their minimum power, which should improve the Signal to Noise Relation (SNR) and avoid errors with data reception.

The display is refreshed and a new value appears.

2. Select **Save** to save the changes.

Notes

- *After changing the Configured Wire option, ASMi-52 must be reset to implement the change.*
 - *When ASMi-52 is operating in Line prob. Adaptive rate, and the clock is internal, the rate is limited up to 2048 bps.*
-

Configuring the Snext Margin

The Snext margin indicates the minimum required target margin with a worst-case self next noise model given the current loop insertion (49 SHDSL next is considered the worst case). This setting is available only if the rate adaptation is enabled (see the line probing configuration below).

Note

Disabling the Snext margin parameter allows the use of all line rates, regardless of line condition.

➤ **To configure the Snext margin:**

1. From the SHDSL Remote Port menu, select **Snext margin** (Main menu > Configuration > SHDSL Configuration > SHDSL Remote Port > Snext Margin).

The Snext Margin menu appears (see [Figure 4-23](#)).

2. Select the Snext margin by typing the number corresponding to the required value.

The SHDSL Remote Port menu appears.

3. Select **Save** to save the changes.

ASMi-52		
<u>Snext margin</u>	(Disable Snext margin)	
-10	12.	1
-9	13.	2
-8	14.	3
-7	15.	4
-6	16.	5
-5	17.	6
-4	18.	7
-3	19.	8
-2	20.	9
-1	21.	10
0	22.	Disable Snext margin
>		
ESC-prev. menu; !-main menu; &-exit; @-scroll		

Figure 4-23. Snext Margin Menu

Configuring the Current Margin

The current margin indicates the minimum required target margin for the local line conditions during the startup sequence. This setting is available only if the rate adaptation is enabled (see the line probing configuration below).

Note

Disabling the current margin parameter allows the use of all line rates, regardless of the line condition.

► To configure the current margin:

1. From the SHDSL Remote Port menu, select **Current Margin** (Main menu > Configuration > SHDSL Configuration > SHDSL Remote Port > Current Margin).

The Current Margin menu appears. The display is identical to the Snext Margin menu, except for its title (see [Figure 4-23](#)).

2. Select the current margin by typing the number corresponding to the required value, and press **<Enter>**.

The SHDSL Remote Port menu appears.

3. Select **Save** to save the changes.

Configuring the Power Spectral Density

By configuring the power spectral density, you define the amount of power applied to the spectrum of frequencies that carry the information signal in order to achieve a satisfactory level of signal strength at the receiving end of the circuit.

The power spectral density can be configured for the ASMi-52 units with the line probing set to fixed.

The power spectral density value depends on the selected modems' compatibility: Annex A or Annex B. The possible values are:

- Symmetric, supported in both Annex A and Annex B modes.
- Asymmetric, supported in Annex A at 768 kbps and in Annex B at 2048 kbps.

➤ **To configure the power spectral density:**

1. From the SHDSL Local Port menu, select **Asym PSD** (Main menu > Configuration > SHDSL Configuration > SHDSL Local Port > Asym PSD) to choose the power spectral density value: symmetrical or asymmetrical.

The display is refreshed and a new value appears.

2. Select **Save** to save the changes.

Note

Remote ASMi-52 units automatically detect the line power density. This parameter is permanently set to Sym/Asym Enable and cannot be changed.

Configuring Line Probing

By configuring this parameter, you force ASMi-52 to perform line probing in order to find the best possible rate of transmission – adaptive rate. Or you command the modem to skip the rate adaptation phase – fixed rate.

Only central ASMi-52 units with the 2-wire line interface support fixed and adaptive rates, remote units operate with adaptive rate only.

ASMi-52 units with the 4-wire line interface support only fixed rate.

➤ **To configure line probing:**

1. From the SHDSL Local Port menu, select **Line Prob** (Main menu > Configuration > SHDSL Configuration > SHDSL Local Port > Line Prob).

The display is refreshed and a new value appears.

2. Select **Save** to save the changes.

Setting the Loop Attenuation Threshold

Loop attenuation is different (in dB) between the power transmitted from the ASMi-52 modem and the power received by the unit operating at the other side of the application. By setting the threshold, the modem is instructed to generate minor alarm (LOOP ATTN. OVER LINE A/B) when the selected loop attenuation threshold value is exceeded.

➤ **To set the loop attenuation threshold:**

1. From the SHDSL Local Port/SHDSL Remote Port/SHDSL Repeater menu, select **Loop attenuation threshold** (Main menu > Configuration > SHDSL Configuration > SHDSL Local Port/SHDSL Remote Port/SHDSL Repeater > Loop Attenuation Threshold).

The loop attenuation threshold can be configured from the SHDSL remote or local port, or from the SHDSL repeater.

2. Enter the required value (**0 dB to 127 dB** for the SHDSL remote/local port or **0 dB to 15 dB** for the SHDSL repeater).
3. Select **Save** to save the changes.

Setting the SNR Margin Threshold

The signal-to-noise ratio threshold can be set. ASMi-52 generates minor alarm (SNR MARGIN OVER LINE A/B) if the signal-to-noise ratio on the line exceeds the threshold value.

► **To set the SNR margin threshold:**

1. From the SHDSL Local Port/SHDSL Remote Port/SHDSL Repeater menu, select **SNR margin threshold** (Main menu > Configuration > SHDSL Configuration > SHDSL Local Port/SHDSL Remote Port/SHDSL Repeater > SNR Margin Threshold).

The SNR margin threshold can also be configured from the SHDSL remote or local port, or from the SHDSL repeater.

2. Enter the required value (**0 dB to 15 dB**).
3. Select **Save** to save the changes.

Configuring the SHDSL Repeater

Configuration parameters of the SHDSL repeaters are similar to those of the SHDSL device except when selecting a repeater that you intend to configure with your own set of configuration.

The SHDSL repeaters are configured via the SHDSL Repeater menu.

► **To access the SHDSL Repeater menu:**

- From the SHDSL Configuration menu, select **SHDSL Repeater** (Main menu > Configuration > SHDSL Configuration > SHDSL Repeater).

The SHDSL Repeater menu is displayed (see [Figure 4-24](#)).

ASMi-52	
<u>SHDSL repeater</u>	
Repeater number [1-8	(1)
Loop Attenuation threshold (dB) [0-127]	(0)
SNR margin threshold (dB) [0-15]	(0)
Save	
>	
ESC-prev. menu; !-main menu; &-exit; @-scroll	

Figure 4-24. SHDSL Repeater Menu

Configuring the DTE Interface Data Rate

ASMi-52 supports multiple data rates between the range of 64 kbps and 4608 kbps, depending on the clock mode and line/DTE interface of the local and remote units (see [Table 1-2](#) and [Table 1-3](#)).

► **To select the data rate:**

1. From the DTE Local Port menu, select **Data Rate**.

The Data Rate menu appears (see [Figure 4-25](#)). The ASMi-52 screen in [Figure 4-25](#) is with a 2-wire, internal clock configuration.

2. Select the data rate by typing the number corresponding to the required value, and press **<Enter>**.

The DTE Local Port menu appears.

3. Select **Save** to save the changes.

ASMi-52		
Data Rate (384 Kbps)		
1. 64 Kbps	13. 832 Kbps	25. 1600 Kbps
2. 128 Kbps	14. 896 Kbps	26. 1664 Kbps
3. 192 Kbps	15. 960 Kbps	27. 1728 Kbps
4. 256 Kbps	16. 1024 Kbps	28. 1792 Kbps
5. 320 Kbps	17. 1088 Kbps	29. 1856 Kbps
6. 384 Kbps	18. 1152 Kbps	30. 1920 Kbps
7. 448 Kbps	19. 1216 Kbps	31. 1984 Kbps
8. 512 Kbps	20. 1280 Kbps	32. 2048 Kbps
9. 576 Kbps	21. 1344 Kbps	33. 2304 Kbps
10. 640 Kbps	22. 1408 Kbps	
11. 704 Kbps	23. 1472 Kbps	72. 4608 Kbps
12. 768 Kbps	24. 1536 Kbps	
>		
ESC-prev. menu; !-main menu; &-exit; @-scroll		

Figure 4-25. Typical Data Rate Menu

Configuring the Data Rate in a Multiplexer Unit

The maximum multiplexer rate is 2048 kbps (general rate). The sum of the data rate of two interfaces should not exceed 2048 kbps.

ASMi-52 is a multiplexer modem with two interfaces that has the following maximum rate for Serial DTE interface:

- If DTE Serial + E1 interface, then the DTE Serial maximum rate = 2048 kbps – used TSs (timeslots) x 64 kbps.
- If DTE Serial + LAN interface, then the DTE Serial maximum rate = 2048 kbps – LAN rate.

Configuring the E1 Interface

The following are commonly used acronyms:

- **CO** – Central Office, where the clock source is set to internal or external
- **CPE** – customer premise equipment.

When ASMi-52 includes a G.704 E1 port, you can configure the following parameters:

- Framed mode

- **Unframed** – Stream of bits at 2.048 Mbps
- **G732N** – Timeslot 0 contains sync word
- **G732S transparent** – 16 frames per multi-frame, timeslot 16 is passed transparently.

Note

-
- If the **opposite** modem is E1, then the Framed Mode value can be is G732N, G732S Transparent, or Unframed.
 - If the **opposite** modem is Serial DTE or LAN, then the Framed Mode value can be G732N, or Unframed
 - If Frame Mode is Unframed, then all the rest of the parameters are disabled.
-

- Sync mode: define the time required for the E1 port to return to normal operation after sync loss:
 - **CCITT** – As per requirements of ITU-T Rec.G.732
 - **Fast** – After 1 sec
 - **62411** – As per requirements of AT&T TR-62411 (after 10 sec).
- CRC-4: Enabling generation and checking of check bits for the frames transmitted on the E1 port (as per CRC-4 polynomial specified by ITU G.704). Check bits generation is available only for the G732N framing mode.
- Idle Code: Selecting a code transmitted to fill unused timeslots in the E1 frames.
- Time Slot Assignment – Assigning each timeslot to carry user's data
- Unit Identical Set
 - **Yes** – copies Sync Mode, Time Slot Assignment and Idle Code definitions to the remote modem
 - **No** – Sync Mode, Time Slot Assignment and Idle Code must be defined in both modems individually
- First time slot for remote E1 – define the first time slot for the remote E1 unit.

The E1 port configuration is performed via the E1 Configuration menu.

➤ **To access the E1 Port Configuration menu:**

- From the E1 Configuration menu, select **E1 Local Port/E1 Remote Port** (Main menu > Configuration > E1 Configuration > E1 Local Port/E1 Remote Port).

The E1 Local Port/E1 Remote Port menu appears (see [Figure 4-26](#) and [Figure 4-27](#)).

```

ASMi-52
E1 Local Port
Framed mode      (G732N)
Sync mode        (CCITT (complies with G732))
CRC-4            (NO)
Idle code         (ff)
Time slots assign
Unit Identical Set      (Yes)
Number TS for remote E1
Save

>

ESC-prev. menu; !-main menu; &-exit; @-scroll

```

Figure 4-26. E1 Local Port Menu

```

ASMi-52
E1 Remote Port
Framed mode      (G732N)
Sync mode        (CCITT (complies with G732))
CRC-4            (NO)
Idle code         (ff)
1. Time slots assign
2. Save

>

ESC-prev. menu; !-main menu; &-exit; @-scroll

```

Figure 4-27. E1 Remote Port Menu

Selecting E1 Framing Mode

Notes

- The Framing mode is configurable if one of the conditions below is fulfilled.
If the local ASMi-52 is configured as CO,
if the local ASMi-52 is configured as CPE and the remote is not an E1 modem.
- The remote ASMi-52 is configurable if the local is configured as CO and is not an E1 modem
- If Frame Mode is Unframed, then the remaining E1 parameters are disabled.

► To select E1 framing mode:

1. From the E1 Local Port menu, select **Framed Mode** (Main menu > Configuration > E1 Configuration > E1 Local Port > Framed Mode).

The Framed Mode menu appears (see [Figure 4-28](#)).

2. From the Framed Mode menu, select **Unframed**, **G732N**, or **G732S transparent**.

The E1 Local Port menu appears.

3. Save the changes.

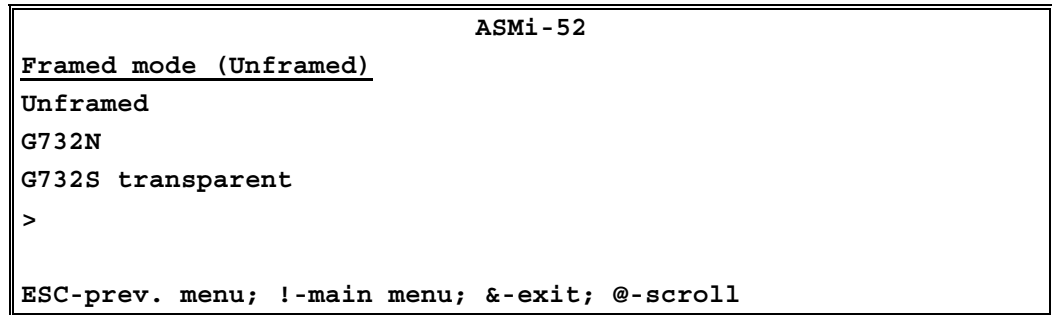


Figure 4-28. Framed Mode Menu

Enabling CRC-4 Code Generation

You have to enable the CRC-4 code generation if you intend to gather statistics on the E1 performance. CRC-4 code generation is available for ASMi-52 units configured to G732N framing mode.

Note

- CRC-4 code generation is configurable if one of the conditions below is fulfilled.
If the local ASMi-52 is configured as a CO,
if the local ASMi-52 is configured as CPE and the remote is not an E1 modem.
- The remote ASMi-52 is configurable if the local is configured as CO and is not an E1 modem.

► To enable CRC-4 code generation:

1. From the E1 Local Port menu, select **CRC-4** (Main menu > Configuration > E1 Configuration > E1 Local Port > CRC-4).

The CRC-4 value changes.

2. Save the changes.

Setting the Sync Mode

You can define the time required for the E1 port operating in framed mode to resume normal operation after loss of synchronization:

- CCITT – As per requirements of ITU-T Rec.G.732
- Fast – After 1 sec
- 62411 – As per requirements of AT&T TR-62411 (after 10 sec).

► To select resynchronization time:

1. From the E1 Local Port/T1 Local Port menu, select **Sync Mode** (Main menu > Configuration > E1 Configuration/T1 Configuration > E1 Local Port > Sync Mode).

The Sync Mode menu appears (see [Figure 4-29](#)).

2. From the Sync Mode menu, select **CCITT**, **FAST**, or **62411**.

The E1 Local Port menu appears.

3. Save the changes.

```

ASMi-52
Sync mode (CCITT (complies with G732))
FAST (after 1 sec)
62411 (after 10 sec)
CCITT (complies with G732)

>

ESC-prev. menu; !-main menu; &-exit; @-scroll

```

Figure 4-29. Sync Mode Menu

Defining Idle Code

You can define the code transmitted to fill an idle (unused) timeslot in the E1 frames.

► **To define an idle code:**

1. From the E1 Local Port menu, select **Idle Code** (Main menu > Configuration > E1 Configuration > E1 Local Port/T1 Local Port > Idle Code)
2. Enter the required code in the range of 00 to FF, then press **<Enter>**.
3. Save the changes.

Mapping E1 Timeslots

When working with framed E1, you can assign each timeslot to carry data or transmit an idle code. To assign the MNG timeslot, the DTS mode must be set to enable (see [Figure 4-7](#)). Only one timeslot can be assigned to MNG.

► **To assign E1 timeslots:**

1. From the E1 Local/Remote Port menu, select **Time slots assign** (Main menu > Configuration > E1 Configuration > E1 Local/Remote Port > Time Slots Assign).

The Time Slots Assign menu appears (see [Figure 4-30](#)).

2. Assign a timeslot to carry data by typing the corresponding number and press **<Enter>**.

The timeslot value changes to:

- **DATA** – timeslot is configured to carry user data
- **MNG** – timeslot is dedicated to carry management traffic
- **NOT_CONNECT** – timeslot is idle.

3. Repeat step 2 for all timeslots that you want to assign.

Alternatively, you can assign all timeslots to carry data at once by selecting **FULL**, or disconnect all timeslots by selecting **CLEAR**.

- Note**
- You can configure timeslot 0 to be looped or transparent:
 - Looped – timeslot 0 is sent back to the E1 interface, when operating opposite remote units with a serial data interface.
 - Transparent – timeslot 0 is transmitted to the remote modem.
 - If you operate [ASMi-52](#) with the G732S transparent framing, timeslot 0 is always transparent and timeslot 16 is always connected.
 - When operating a 2-wire ASMi-52 with E1 interface opposite ASMi-52 with V.35 interface (not in low speed mode), assign at least three timeslots, excluding timeslot 0, to carry data.
 - When operating a 4-wire ASMi-52 with E1 interface opposite ASMi-52 with a V.35 interface (not in low speed mode), assign at least six timeslots, excluding timeslot 0, to carry data.

- Once you finish assigning timeslots, press **<Esc>** to return to the E1 Local/Remote Port menu.
- Save the changes.

ASMi-52					
Time slots Assign					
TS0	(LOOP)	17.	TS16	(DATA)	33. FULL
TS1	(DATA)	18.	TS17	(DATA)	34. CLEAR
TS2	(DATA)	19.	TS18	(DATA)	
TS3	(DATA)	20.	TS19	(DATA)	
TS4	(DATA)	21.	TS20	(DATA)	
TS5	(DATA)	22.	TS21	(DATA)	
TS6	(DATA)	23.	TS22	(DATA)	
TS7	(DATA)	24.	TS23	(DATA)	
TS8	(DATA)	25.	TS24	(DATA)	
TS9	(DATA)	26.	TS25	(DATA)	
TS10	(DATA)	27.	TS26	(DATA)	
TS11	(DATA)	28.	TS27	(DATA)	
TS12	(DATA)	29.	TS28	(DATA)	
TS13	(DATA)	30.	TS29	(DATA)	
TS14	(DATA)	31.	TS30	(DATA)	
TS15	(DATA)	32.	TS31	(DATA)	
ESC-prev. menu; !-main menu; &-exit; @-scroll					

Figure 4-30. Time Slots Assign Menu

Mapping E1 Timeslots in a Multiplexer Unit

The maximum multiplexer rate is 2048 kbps (general rate). The sum of the data rate of two interfaces should not exceed 2048 kbps.

For example:

- DTE Serial Interface + LAN – If the DTE Serial Interface works at 1024 kbps, then LAN cannot work at a speed of more than 1024 kbps because the sum of both interfaces cannot exceed 2048 kbps.

ASMi-52 has a multiplexer modem with two interfaces. The maximum timeslots that can be used are as follows:

- If E1 + LAN, then the maximum TSs (timeslots) = (2048 kbps – LAN rate) / 64 kbps.
- If E1 + Serial DTE, then the maximum possible Ts (timeslots) = (2048 kbps – Serial DTE data rate) / 64 kbps.

If the maximum timeslots available are not sufficient, you can remap the E1/T1 timeslots:

► **To map E1 timeslots in a multiplexer unit with E1 + LAN:**

1. From the Configuration menu, select **LAN Configuration** (Main menu > Configuration > LAN Configuration).

The LAN Configuration menu is displayed.

2. From the LAN Configuration menu, select **Local LAN Configuration**.

The Local LAN Configuration menu is displayed, (see [Figure 4-32](#)).

3. Select **LAN Rate** from the Local LAN Configuration menu and reduce the LAN data rate accordingly.
4. Return to E1 configuration and use the newly available timeslots.

► **To map E1 timeslots in a multiplexer unit with E1 + Serial DTE:**

1. From the Configuration menu, select **DTE Configuration** (Main menu > Configuration > DTE Configuration).

The DTE Configuration menu is displayed.

2. From the DTE Configuration menu, select **DTE Local Port**.

The DTE Local Port menu is displayed.

3. From the DTE Local Port menu, select **Data Rate**.
4. Check the maximum data rate and reduce the DTE data rate accordingly.

Note *It is possible to configure the E1 timeslots before configuring the LAN or DTE interface. In this case the E1 bandwidth used adjusts the LAN and DTE rate that can be configured.*

Matching Remote Unit Settings with Local Unit Settings

The Unit Identical Set parameter allows you to match some parameters in the remote unit with the local unit, without having to define each parameter individually.

The following parameters are set automatically when the Unit Identical Set parameter is set to **Yes**.

- Sync Mode
- Time Slot Assignment (TSA)
- Idle Code

There are certain conditions for the Unit Identical Set.

If the **Frame Mode** is G732S transparent:

- Only when the local modem is configured as CO, you can configure the **Sync Mode**, **Idle Code**, and **TSA**.
- The Unit Identical Set is permanently set to Yes, the parameters are copied to the remote unit.

If the **Frame Mode** is not G732S:

- The Unit Identical setting can be set to **Yes** or **No** when the local modem is configured as CO and both modems are E1.
- If the Unit identical set is **Yes**, then the Sync Mode, TSA and Idle Code are automatically configured in the remote unit if the following conditions are met:
 - If the local ASMi-52 is defined as CO.
 - If the local ASMi-52 is defined as CPE and the remote unit is not an E1 modem.
 - In the remote ASMi-52 if the local is defined as CPE and it is not an E1 modem.
- If the Unit identical set is **No**, then the Sync Mode, TSA and Idle Code are configurable as follows:
 - Local ASMi-52 in any configuration.
 - Remote ASMi-52 if the local is defined as CO.

➤ **To match remote unit settings with local unit settings:**

1. From the E1 Configuration menu, select **Local/Remote Port** (Main menu > Configuration > E1 Configuration > E1 Local/Remote Port).

The E1 Local/Remote Port is displayed.

2. From the E1 Local/Remote Port menu, select **Units Identical Setting**.

The Units Identical Setting value changes to **YES**.

3. Save the changes.

Configuring the T1 Interface

ASMi-52 units with T1 interface require configuration of the following parameters:

- Framing mode:
 - **Unframed** – Stream of bits at 1.544 Mbps
 - **ESF** – 24 frames per multi-frame
 - **SF** – 12 frames per multi-frame
- Line coding:
 - **B8ZS** – B8ZS coding
 - **AMI** – AMI coding

- Receive gain (sensitivity of the receive equalizer):
 - **Long** – -36 dB
 - **Short** – 15 dB
- Interface:
 - **DSU** – DSU interface
 - **CSU** – CSU interface
- Transmit signal mask (DSU mode) – length of a cable in feet between the ASMi-52 T1 port connector and the network access point:
 - **0 feet** – 0 to 133 feet
 - **133 feet** – 133 to 266 feet
 - **266 feet** – 266 to 399 feet
 - **399 feet** – 399 to 533 feet
 - **533 feet** – 533 to 655 feet
- Transmit signal mask (CSU mode) – relative T1 output transmit level:
 - **7.5 dB** – attenuation of 7.5 dB relative to the nominal transmit level
 - **15 dB** – attenuation of 15 dB relative to the nominal transmit level
 - **22.5 dB** – attenuation of 22.5 dB relative to the nominal transmit level
- Fbit configuration – Fbit transmission mode:
 - **Transparent** – F bits are sampled at TSER
 - **Internally Source** – F bits are sourced internally.

Note

Configuration of the sync mode, idle mode, timeslot assignment and matching of T1 setting of the local and remote units (Unit Identical Set) is identical of that of the E1 interface. Refer to [Configuring the E1 Interface](#) section above.

➤ **To access the T1 Configuration menu:**

1. From the Configuration menu, select **T1 Configuration**.

The T1 Configuration menu appears.

2. From the T1 Configuration menu, select **T1 local port** for the local port configuration or select **T1 remote port** for the remote port configuration.

The T1 Local/Remote Configuration menu appears (see [Figure 4-31](#)).

ASMi-52	
T1 Local Port Configuration	
Framed Mode	> (SF)
Line code	(B8ZS/AMI)
Receive Gain	(LONG/SHORT)
Interface	> (DSU/CSU)
Transmit Signal Mask	(7.5 dB)
Fbit Configuration	(Transparent/Internally Source)
Sync Mode	(FAST)
Units identical setting	(Yes/No)
Idle code	(ff)
Time slots assign	>
Save	
>	
ESC-prev. menu; !-main menu; &-exit;	

Figure 4-31. T1 Port Configuration

Configuring the LAN Port

ASMi-52 includes a 10/100BaseT port that can be used as a user or management port. The LAN port operates in a self-learning bridge or transparent mode, with or without autonegotiation.

Note

If the LAN port serves as a management port only, it operates in transparent mode with autonegotiation enabled.

Configuring the LAN Port Operation Mode

In the transparent mode, the LAN port operates with a disabled filter, passing all frames transparently. When operating as a self-learning bridge, the LAN port filters the packets received from the local LAN and transfers through the link only frames destined for another LAN.

► To configure the LAN operation mode:

1. From the Operation Mode menu, select the **Bridging Mode** option (Main menu > Configuration > LAN Configuration > Local LAN Configuration > Bridging Mode) to enable bridge mode.

Note

*If LAN interface is used for data, the Operation Mode is set to **Bridge**. If Ethernet is used for management purposes only, then the Operation Mode is permanently set to **Transparent**.*

The LAN Configuration menu appears.

2. From the LAN Configuration menu, select **Save** to save your changes.

```

ASMi-52
Local LAN Configuration
  Operation Mode                               (BRIDGE)
  Bridging Mode                               (ACCESS ONLY)
  1. Bridge Table                             []>
  2. Aging Timeout(sec) [10 - 1000000]        ... (10)
  3. Auto negotiation                         (ENABLE)
  4. Max AutoNeg Capability > (100BASE_T-full duplex mode)
  5. Fault indication                         (NO)
  6. LAN rate > (N/A rate)
  7. QoS mapping (Classification 802.1p) >
  8. Save
>
ESC-prev. menu; !-main menu; &-exit; @-scroll

```

Figure 4-32. LAN Configuration Menu

Note

If autonegotiation is enabled, the maximum autonegotiation capability rate is 100BaseT full-duplex mode. If autonegotiation is disabled, it is called default type or 10BaseT.

Completing the Bridging Table

When the 10/100BaseT port operates in the bridge mode, you can assign MAC addresses to the local or remote LAN.

➤ To fill out the bridge table:

1. Select **Bridging Table** from the Local LAN Configuration menu (Main menu > Configuration > LAN Configuration > Local LAN Configuration > Bridging Table).

The Bridge Table appears (see [Figure 4-33](#)).

```

ASMi-52
Bridge Table
MAC Address  Port      Type
0010b340500  LAN      Static
0040e108070  DSL      Static
000000000000  Static
>
ESC-prev. menu; !-main menu; &-exit; ?-help

```

Figure 4-33. Bridge Static Table, Normal Mode

2. From the Bridge Table, select an empty cell (the one with MAC address 00000000000 and unassigned port) by typing **D** to move the cursor downwards or **U** to move it upwards.

You can also select an existing MAC address to reassign it.

3. Once the MAC address is selected, type **m** to enable editing mode.

The Bridge Table enters editing mode (see [Figure 4-34](#)).

4. In the editing mode, select **MAC Address** and enter a MAC address value.
5. Select **Port** and assign the current MAC address to the local LAN by entering **LAN** or to the remote LAN by entering **DSL**.
6. Select **Save All** to save the changes.
7. Press **<Esc>** to exit the editing mode.

► **To remove a MAC address from the table:**

1. From the Bridge Table, select the MAC address that you intend to remove from the static table.
2. Enter editing mode, as explained above.
3. Enter zeros for the MAC address value and save the change.

ASMi-52	
Bridge Table	
Type	(Static)
MAC Address ...	(000000000000)
Port ...	()
>	
ESC-prev. menu; !-main menu; &-exit; ?-help	

Figure 4-34. Bridge Table, Editing Mode

Configuring Aging Timeout

The aging time is the timeout period in seconds for aging out dynamically learned forwarding information. When the timeout period is over, the bridge removes all inactive nodes from its database.

► **To configure aging timeout:**

1. From the Local LAN Configuration menu, select **Aging Timeout** (Main menu > Configuration > LAN Configuration > Local LAN Configuration > Aging Timeout).

The LAN Rate menu appears.

2. Enter a new aging timeout value in seconds and press **<Enter>**.
3. Select **Save** to save the change.

Configuring QoS Mapping

The QoS mapping or the so-called VLAN priority feature prioritizes transmission information according to traffic class. VLAN priority is based on a table of 8 integers (0 to 8) that maps evaluated user priority (see [Figure 4-35](#)). Each integer in the table handles up to four levels of priority and transmits information to the

DSL line according to these priorities (see [Figure 4-36](#)). This feature is supported in the multiplexer unit and in old LAN units.

Note

This QoS mapping or VLAN Priority feature is different from the VLAN Priority under Management

► **To configure VLAN Priority (QoS Mapping):**

1. From the Local LAN Configuration menu, select **QoS Mapping** (Main menu > Configuration > LAN Configuration > Local LAN Configuration > QoS Mapping).
2. Select a User Priority number from the menu, (see [Figure 4-35](#)).

The User Priority (Traffic Class 0) menu appears (see [Figure 4-36](#)).

```

ASMi-52
QoS Mapping (Classification 802.1p)
User Priority 0 >      (Traffic Class 0)
User Priority 1 >      (Traffic Class 0)
User Priority 2 >      (Traffic Class 0)
User Priority 3 >      (Traffic Class 0)
User Priority 4 >      (Traffic Class 0)
User Priority 5 >      (Traffic Class 0)
User Priority 6 >      (Traffic Class 0)
User Priority 7 >      (Traffic Class 0)

>
ESC-prev. menu; !-main menu; &-exit; @-scroll

```

Figure 4-35. QoS Mapping Menu

3. Select any of the 4 level of priority to define the transmission priority of the information to be transmitted to the DSL line.
4. Select **Save** to save the change.

```

ASMi-52
User Priority 5 (Traffic Class 0)
Traffic Class 0 = low
Traffic Class 1
Traffic Class 2
Traffic Class 3 = high

>
ESC-prev. menu; !-main menu; &-exit; @-scroll

```

Figure 4-36. User Priority (Traffic Class 0)

Setting the LAN Rate

When the LAN port of ASMi-52 is used for the DTE connection, the DTE rate is configured via the LAN rate menu. The LAN rate depends on the rate mode (regular or low speed, see [Configuring Low Speed Operation](#) above) and the line interface (2-wire or 4-wire).

Note *ASMi-52 units operating in the receive clock mode automatically detect the LAN rate of the central units and configure themselves accordingly.*

➤ **To set the LAN rate:**

1. From the Local LAN Configuration menu, select **LAN Rate** (Main menu > Configuration > LAN Configuration > Local LAN Configuration > LAN Rate).

The LAN Rate menu appears (see [Figure 4-37](#)).

2. From the LAN Rate menu, select the required data rate.

The Local LAN Configuration menu appears.

3. From the LAN Configuration menu, select **Save** to save the new value.

ASMi - 52					
<u>Data Rate</u> (2304 Kbps)					
64 Kbps	12.	768 Kbps	23.	1472 Kbps	
128 Kbps	13.	832 Kbps	24.	1536 Kbps	
192 Kbps	14.	896 Kbps	25.	1600 Kbps	
256 Kbps	15.	960 Kbps	26.	1664 Kbps	
320 Kbps	16.	1024 Kbps	27.	1728 Kbps	
384 Kbps	17.	1088 Kbps	28.	1792 Kbps	
448 Kbps	18.	1152 Kbps	29.	1856 Kbps	
512 Kbps	19.	1216 Kbps	30.	1920 Kbps	
576 Kbps	20.	1280 Kbps	31.	1984 Kbps	
640 Kbps	21.	1344 Kbps	32.	2048 Kbps	
704 Kbps	22.	1408 Kbps	33.	2304 Kbps	
>					
ESC-prev. menu; !-main menu; &-exit; @-scroll					

Figure 4-37. LAN Rate Menu (2-Wire Version)

Setting the LAN Rate in a Multiplexer Unit

The maximum multiplexer rate is 2048 kbps (general rate). The sum of the data rate of two interfaces should not exceed 2048 kbps.

For example:

- DTE Serial Interface + LAN – If the DTE Serial Interface works at 1024 kbps, then LAN cannot work at a speed of more than 1024 kbps because the sum of both interfaces cannot exceed 2048 kbps.

ASMi-52 has a multiplexer modem with two interfaces. The maximum rate for LAN is:

- If LAN + E1, then the LAN maximum rate = 2048 kbps – used TSs (timeslots) x 64 kbps
- If LAN + DTE Serial Interface, then the LAN maximum rate = 2048 kbps – DTE rate

Configuring Autonegotiation

ASMi-52 autonegotiation allows you to operate at the fastest data rate available. With autonegotiation enabled, the ASMi-52 unit automatically determines between itself and the DTE the fastest data rate and duplex mode that they can operate. With autonegotiation disabled, the LAN interface of ASMi-52 operates at the speed and duplex mode that is configured by the Default type.

► **To set autonegotiation:**

1. From the Local LAN Configuration menu, select Autonegotiation (Main menu > Configuration > LAN Configuration > Local LAN Configuration > Autonegotiation).

Toggle between **Enable** and **Disable**.

2. If the autonegotiation is enabled, choose **Max AutoNeg Capability** from the Local LAN Configuration menu.

The Set Capability menu appears.

3. Select the required LAN operation mode by choosing one of the following:

- 10BaseT half-duplex
- 10BaseT full-duplex
- 100BaseT half-duplex
- 100BaseT full-duplex.

4. If the autonegotiation is disabled, choose **Default Type** from the LAN Configuration menu.

The Set Default menu appears.

5. Select the desired LAN operation mode by choosing one of the following:

- 10BaseT half-duplex
- 10BaseT full-duplex
- 100BaseT half-duplex
- 100BaseT full-duplex.

6. From the Local LAN Configuration menu, select **Save**.

Detecting SHDSL Link Failure

If Fault Indication parameter on the LAN Configuration menu is enabled and a loss of SHDSL signal is detected on the line, the Ethernet link is disconnected by ASMi-52. If Fault Indication is not selected, the SHDSL link failure indication is not passed through to the LAN side.

► **To set the fault indication:**

1. From the Local LAN Configuration menu, select **Fault Indication** (Main menu > Configuration > LAN Configuration > Local LAN Configuration > Fault Indication).

Toggle between Yes and No.

2. Select **Save** to save your changes.

4.3 Performing Additional Tasks

Displaying the ASMi-52 Status

The ASMi-52 software allows you to display the modem system and physical port information.

The status information is available via the Monitoring menu.

➤ **To access the Monitoring menu:**

From the Main menu, select **Monitoring**.

The Monitoring menu appears (see [Figure 4-38](#)).

```
ASMi-52
Monitoring

1. Total Alarms                      [] >
2. System monitoring                 >
3. Physical ports status             >
4. Physical ports Statistics          >
5. Repeater status                   >
6. Open Virtual Connection           >
>
ESC-prev. menu; !-main menu; &-exit;
```

Figure 4-38. Monitoring Menu

Displaying the System Status

➤ **To display the system information:**

- From the System Monitoring menu, select **System Status** (Main menu > Monitoring > System Monitoring > System Status) to display the device status information.

The System Status menu appears (see [Figure 4-39](#)).

ASMi-52		
<u>System Status</u>		
	Local	Remote
Device Type	(ASMi52_SA_M (PLASTIC)-STU_C-2W)	ASMi52_SA
Clock Source	(INT)	RCV
Software Version	(2.01E24)	(2.01E24)
Hardware Version	(0.00)	(0.00)
FPGA Version	(0.13)	(0.13)
Hardware Status	(NO HARDWARE FAILURE) (NO HW FAILURE)	
PS	(WIDE RANGE PS 48-60 VDC/100-240 VAC) (WIDE RANGE)	
MAC address	(0 20 D2 20 5F AB)	(0 20 D2 21 12)
IP address	(172.17.161.73)	(172.17.161.75)
Alarm Indication	NORMAL	NORMAL
Test Indication	(OFF)	(OFF)
>		
ESC-prev. menu; !-main menu; &-exit;		

Figure 4-39. System Status Screen

Note Alarms are described in [Chapter 5](#).

Displaying the Port Status

► To display the port status information:

1. From the Physical Port Status menu, select **Port Status** (Main menu > Monitoring > Physical Port Status > Port Status) to display the port status.

The Port Status menu appears (see [Figure 4-40](#)).

ASMi-52	
Port status	
	Local Remote
SHDSL	(Standard ANNEX_B, Wire mode 2W)
SHDSL Line	(Status: SYNC, State: DATA mode)
Framer Type	(SLOTTED E1)
EOC compatible	(PROPRIETARY)
Actual PSD	(ASYM_PSD_DISABLE)
Line rate	(2048 kbps + 8 kbps)
E1 interface	(IR-G704-E1/BALANCE Data rate: 2048 kbps)
HW status	(NO HARDWARE FAILURE)
Test status	(NONE) >
Alarm status	(NORMAL)
REM connected line (1)	
(N)	
ESC-prev. menu; !-main menu; &-exit;	

Figure 4-40. Port Status Menu

Note The physical port alarms are described in [Chapter 5](#).

2. Type N to display the next page.

Accessing the Remote ASMi-52

Accessing the remote ASMi-52 is performed using a virtual connection with your terminal physically connected to the local unit.

- **To access the remote ASMi-52**
 1. From the Monitoring menu ([Figure 4-38](#)), select **Open Virtual Connection** (Main menu > Monitoring > Open Virtual Connection).
 2. The Login screen of the second ASMi-52 appears.
 3. Login to the second ASMi-52.

You now have access to the second ASMi-52 menus.

Note If no key press is sensed for a period of 10 minutes, the virtual connection closes and you are returned to the initial ASMi-52.

- **To close a virtual terminal**
 - From the Monitoring menu of the second ASMi-52, select **Close Virtual Connection**.

The Main menu of the first ASMi-52 is displayed.

Displaying the ASMi-52 Inventory

The ASMi-52 inventory displays information on the functional blocks of the local or remote modem.

ASMi-52 consists of the following components:

- SHDSL unit
- DTE unit
- Terminal control port
- 10/100BaseT port
- Alarm relay port
- Power supply.

➤ To display the ASMi-52 inventory:

1. From the Main menu, select **Inventory**.

The Inventory screen appears (see [Figure 4-41](#)).

2. Use the following keys to move around the indices.

- L – move left, l – scroll left,
- R – move right, r – scroll right
- U – move up, u – scroll up
- D – move down, d – scroll down
- <Tab> – select next changeable cell.

```

                                ASMi-52
Inventory
  1
  Index 1001
  Description      RAD-local ASMi-52_M SHDSL modem
  Vendor type
  Contained in    0
  Class 3
  Rel pos         0
  Name            SHDSL modem
  HW ver          0.00
  SW ver          1.00E54
  ->>
>
ESC-prev. menu; !-main menu; &-exit; @-scroll; ?-help

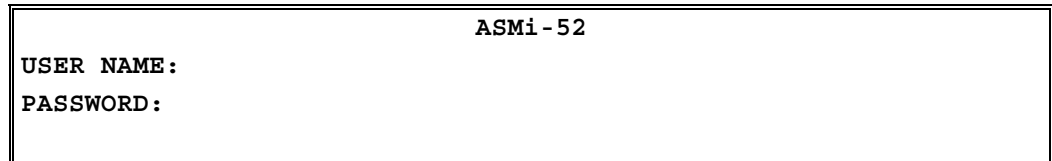
```

Figure 4-41. Inventory Screen

Entering the User Name and Password

Once you have installed the ASMi-52 modems at the central and remote locations, and have completed the installation and operation procedures described in [Chapter 2](#) and [Chapter 3](#), you can start a control session.

You have to enter a user name and password in order to start the ASMi-52 management software (see [Figure 4-42](#) and [Figure 4-43](#)).



A terminal window titled "ASMi - 52" displays the login prompt. The text "USER NAME:" is followed by a blank line, and "PASSWORD:" is followed by another blank line.

Figure 4-42. Password Request Screen (Terminal Session)



A screenshot of a web browser window showing the ASMi-52 login page. The browser's address bar displays "http://172.17.161.189/configurad/frame - Microsoft Internet Explorer". The page features a header with the "RAD" logo, "data communications", and "ASMi-52". Below the header, there is a "Login" section with two input fields: "User Name:" and "Password:". A "Submit" button is located below the password field. A red square highlights the "ConfiguRAD" logo in the top right corner of the page.

Figure 4-43. Password Request Screen (ConfiguRAD Session)

► To enter the user name and password:

1. Type in your user name and press <Tab>.

Note

*You can leave the user name field empty (default), the default password is **1234**.*

2. Type in your password at the > prompt (up to eight characters).
ASMi-52 responds to your entry with asterisks.
3. Press <Enter>.

The Main menu is displayed (see [Figure 4-44](#) and [Figure 4-45](#)).

```

ASMi-52

Main Menu
Inventory
Configuration
Monitoring
Diagnostics
File Utilities

>

ESC-prev. menu; !-main menu; &-exit; @-scroll

```

Figure 4-44. Main Menu (Terminal Session)



Figure 4-45. Main Menu (ConfiguRAD Session)

Transferring Software and Configuration Files

Software and configuration files can be transferred using TFTP and XMODEM.

This section presents procedures for installing new software releases into the ASMi-52 units, as well as swapping existing software versions in a local or remote unit. Complete information on upgrading the ASMi-52 software is provided in [Chapter 6](#).

ASMi-52 stores two software versions, each of them in one of the two 512-byte partitions of its flash memory, which also contains a boot program. The software is stored in compressed format. The active version is decompressed and loaded into the ASMi-52 RAM upon power-up. The passive software is kept for backup purposes. By default, ASMi-52 is delivered with the active software only.

New software releases are distributed on diskettes as an ***.img** file, which is downloaded to the local ASMi-52 using the TFTP or XMODEM protocol. Upon downloading, the new software release becomes active, the former active software turns into backup, and the former backup is erased.

If a failure occurs during downloading or decompression, the new version is erased from the flash and the backup version becomes active. In this case, only one version is left stored in the flash memory. If the active software becomes corrupted, you can replace it with its backup.

Installing a New Software Release via TFTP

► To install a new software release via TFTP:

1. From the SW & File Transfer menu, select **TFTP** (*Figure 4-46*) (Main menu > File Utilities > SW & File Transfer > SW Download > TFTP).

ASMi-52	
<u>TFTP</u>	
TFTP status	(No operation)
TFTP error	(No error)
TFTP IP server	(172.17.160.103)
TFTP file name	(201e24.img)
TFTP retry timeout (sec) [0-300]	(15)
TFTP total timeout (sec) [0-4000]	(1200)
Save	
Transfer command	
>	
ESC - prev. menu ; ! - main menu ; & - exit	

Figure 4-46. TFTP Menu

2. From the TFTP menu, perform the following steps:
 - Select **TFTP IP Server** and enter the IP address of the TFTP server
 - Select **TFTP File Name** and enter the name of the software file (for example, **201e24.img**).
 - Select **TFTP Retry Timeout** and specify intervals between connection retries (in seconds).
 - Select **TFTP Total Timeout** and specify the TFTP connection timeout (in seconds).
 - Select **Save** to save the TFTP configuration.
 - Select **Transfer Command** to start downloading file to ASMi-52.

ASMi-52 automatically erases the backup partition. Once downloading is completed, ASMi-52 saves the new release as an active partition, the former active partition becomes the backup.

Once downloading is complete, ASMi-52 decompresses the release file, displaying the following message:

Final process download. Reset

After the decompression, ASMi-52 saves the new release as an active partition, the former active partition becomes backup. Then the unit

resets itself. This causes the new software to be loaded into the modem's RAM.

Installing a New Software Release via XMODEM

Notes

- *Installation of the new software releases via XMODEM is not possible over Telnet.*
- *To minimize the software downloading time, it is recommended to configure the CONTROL port to the highest available data rate, see [Changing the Control Port Data Rate](#) section above.*

► To install a new software release via XMODEM:

1. From the SW & File Transfer menu, select **XMODEM** (Main menu > File Utilities > SW & File Transfer > SW Download > XMODEM).

ASMi-52 responds with the following string:

PLEASE OPEN XMODEM APPLICATION.

For exit press Q(uit)

If you press <Q>, ASMi-52 aborts the download process and displays **Download failure. Press Esc to continue.** message in addition to the previous display.

Note

During the software installation, the TST indicator blinks.

2. Send the *.img file to ASMi-52 using the XMODEM protocol of your terminal application.

Once downloading is complete, ASMi-52 decompresses the release file, displaying the following message:

Final process download. Reset device after 5 seconds

After the decompression, ASMi-52 is automatically reset. This causes the new software to be loaded into the modem's RAM.

Autoconfiguration through TFTP or XMODEM

Modem autoconfiguration is possible by means of TFTP or the XMODEM option. A file has to be uploaded and/or downloaded to be able to copy a configuration file from one modem acting as the source to the other modem(s). The modem configuration can be uploaded to a different location (i.e., a PC) as a file that is not in the modem or downloaded from the configuration source (i.e., modem).

The following functionalities are available for auto-configuration:

- To upload a current configuration from the database to a PC and/or a Flash disk
- To download a configuration file from a source to the current configuration.

➤ **To upload a configuration from the source device:**

1. From the SW & File Transfer, select **Auto Configuration** (Main menu > File Utilities > SW & File Transfer > Auto Configuration) to select an auto-configuration type.

The Auto Configuration menu is displayed.

2. Select **Command (Upload/Download Full/Part Download)** and select **Command** and set to **Upload** (see [Figure 4-48](#)).
3. Select TFTP or XMODEM (as in software download).

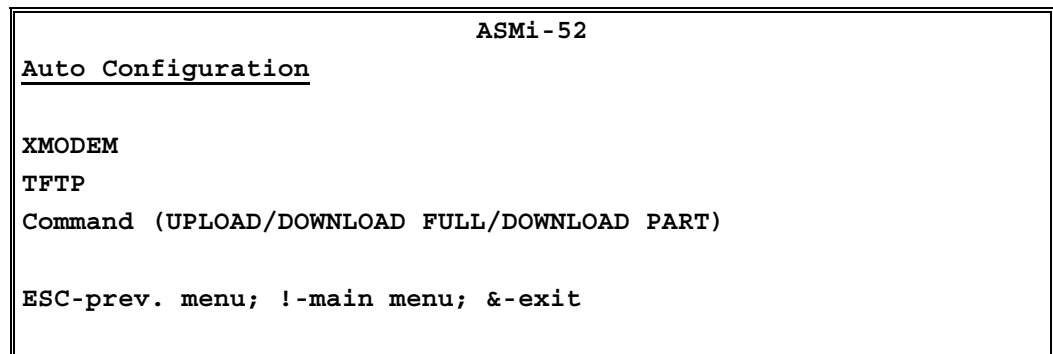


Figure 4-47. Software Version Screen

4. From the SW & File Transfer menu, select **TFTP** ([Figure 4-46](#)) (Main menu > File Utilities > SW & File Transfer > SW Download > TFTP).
5. From the TFTP menu, perform the following steps:

- Select **TFTP IP Server** and enter the IP address of the TFTP server
- Select **TFTP File Name** and enter the name of the software file (for example, **201e24.img**).
- Select **TFTP Retry Timeout** and specify intervals between connection retries (in seconds).
- Select **TFTP Total Timeout** and specify the TFTP connection timeout (in seconds).
- Select **Save** to save the TFTP configuration.
- Select **Transfer Command** to start downloading file to ASMi-52.

ASMi-52 automatically erases the backup partition. Once downloading is completed, ASMi-52 saves the new release as an active partition, the former active partition becomes the backup.

Once downloading is complete, ASMi-52 decompresses the release file, displaying the following message:

Final process download. Reset

After the decompression, ASMi-52 saves the new release as an active partition, the former active partition becomes backup. Then the unit resets itself. This causes the new software to be loaded into the modem's RAM.

➤ **To download a configuration file to the target device(s):**

1. From the SW & File Transfer, select **Auto Configuration** (Main menu > File Utilities > SW & File Transfer > Auto Configuration) to select an auto-configuration type.

The Auto Configuration menu is displayed.

2. Select **Command (Upload/Download Full/Part Download)** and select **Download Full/Part** to download the file (see [Figure 4-48](#)).
3. Select TFTP or XMODEM (as in software download).

Displaying the Software Version

You can display the information on the software revision of the local or remote modem. The information includes a description of the active program, which is currently used by ASMi-52, and also details on the passive software kept for backup purposes.

➤ **To display the software version:**

- From the File System menu (Main menu > File Utilities > File System > SW Files), select **SW Files** to display the software revision of the ASMi-52 device.

The Software Version menu appears (see [Figure 4-48](#)).

ASMi-52		
<u>SW files</u>		
	Local	Remote
Software active version:	(2.01E24)	(2.02000)
Software active partition:	(0)	(0)
Code size:	(813110)	(813161)
Date:	(28-7-4)	(2-8-4)
Software backup version:	(2.01E24)	(2.01E11)
Software backup partition:	(1)	(1)
Code size:	(813110)	(809233)
Date:	(28-7-24)	(9-6-4)
Boot version:	(1.10)	(1.10)
Boot mng version:	(5.34)	(5.34)
Press any key to continue...		
ESC-prev. menu; !-main menu; &-exit		

Figure 4-48. Software Version Screen

Switching Software Versions

If an active software becomes corrupted, you can switch it with the backup in the local ASMi-52 units.

► **To switch software versions:**

1. From the File System menu, select the **SWAP Local SW Files** (Main menu > File Utilities > File System > Swap Local SW Files) to swap files in the local ASMi-52.

ASMi-52 displays the following message:

Request to swap SW files!!! Confirm Y/N

2. Type **Y** to confirm the file swap.

ASMi-52 performs the swap and sends the following string:

Program Switching

The active software becomes the backup and vice versa. At this stage, ASMi-52 is automatically reset.

If you try to switch the software versions when only one version is available, ASMi-52 responds with the following message:

Impossible to switch - no other program

Press any key to continue

Resetting ASMi-52

ASMi-52 supports four types of reset:

- Reset to the default setting
- SHDSL interface reset
- SHDSL repeater line reset
- Overall reset.

Resetting to Default Settings

You can reset the local or remote ASMi-52 to its default settings. Resetting to the factory default does not affect the master clock setting. In addition, you can reset the local ASMi-52 without affecting its management parameters (IP address, mask and default gateway).

► **To reset ASMi-52 to the factory default:**

1. From the System Configuration menu, select **Factory Default**. (Main menu > Configuration > System Configuration > Factory Default).

The Factory Default menu is displayed (*Figure 4-49*).

ASMi-52	
<u>Factory default</u>	
Remote unit number	(1)
Local factory default	...
Remote factory default	...
Local factory default W/O MNG	...
Remote factory default W/O MNG	...
>	
ESC - prev. menu ; ! - main menu ; & - exit	

Figure 4-49. Factory Default Menu

2. From the Factory Default menu, perform one of the following steps:
 - Select **Local Factory Default** to reset the local ASMi-52.
 - Select **Remote Factory Default** to reset the remote device.
 - Select **Local Factory Default W/O MNG** to reset all parameters, except for the IP address, mask, default gateway and the manager list of the local ASMi-52.
 - Select **Remote Factory Default W/O MNG** to reset all parameters, except for the IP address, mask, default gateway and the manager list of the remote ASMi-52.

Note

Local/Remote Factory Default W/O MNG parameters are available only for the units equipped with the management LAN port.

ASMi-52 displays the following message:

Request to factory default !!! Confirm Y/N

3. Type **Y** to confirm the reset.

ASMi-52 resets all configuration parameters, except for the master clock (and IP values), to their default settings and restarts the system.

Resetting the ASMi-52 Modem

You can reset the SHDSL interface of the modem or repeater, or perform the overall reset of the modem.

► To reset the SHDSL interface or perform the overall device reset:

1. From the System Configuration menu, select **Reset**.

The Reset menu appears (see [Figure 4-50](#)).

2. From the Reset menu, select **Local Reset** to reset the local modem or **Remote Reset** to reset the remote device.

The Local/Remote Reset menu appears (see [Figure 4-51](#)).

3. From the Local/Remote Reset menu, select **Local/Remote Device Reset** to perform the overall reset or select **Local/Remote SHDSL Line Reset** to reset the SHDSL interface.

A confirmation message appears.

4. Type **Y** to confirm the reset.

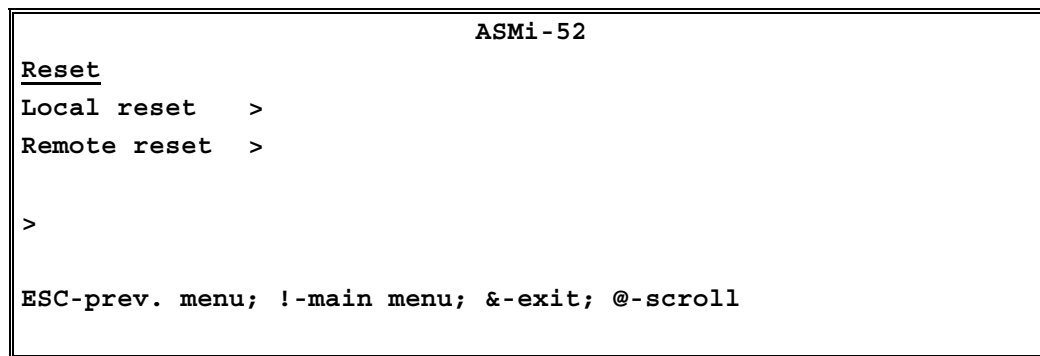


Figure 4-50. Reset Menu

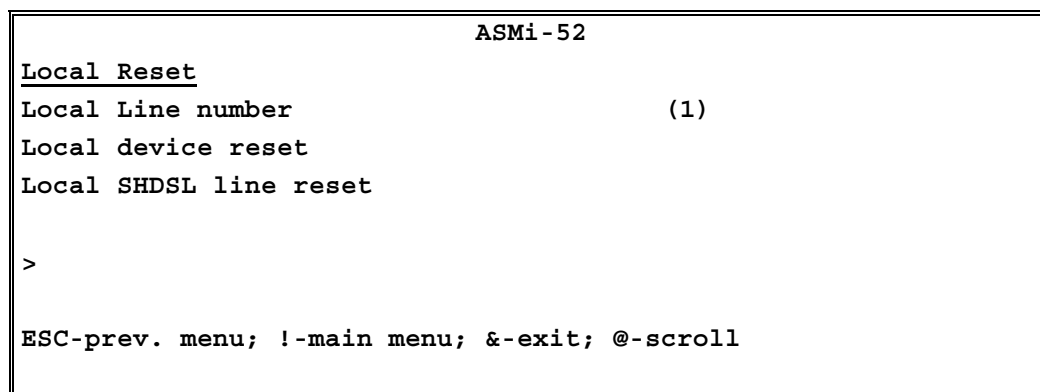


Figure 4-51. Local Reset Menu

Resetting the SHDSL Repeater

You can reset the SHDSL repeater line interface from the local ASMi-52 via the Reset menu.

► To reset the line interface of the SHDSL repeater:

1. From the Reset menu, select **Repeater Reset** (Main menu > Configuration > System Configuration > Reset > Repeater Reset).

The Repeater Reset menu appears (see [Figure 4-52](#)).

2. From the Repeater Reset menu, select **Repeater Number**.

The Repeater Number menu appears.

3. From the Repeater Number menu, select the repeater that you intend to reset.
4. From the Repeater Reset menu, select **Repeater SHDSL Line Reset** to reset the SHDSL line interface of the repeater.
5. Type **Y** to confirm the reset.

```

                                ASMi-52
Repeater Reset
Repeater SHDSL line reset . . .
Repeater number                      >   (1)

>

ESC-prev. menu; !-main menu; &-exit; @-scroll
```

Figure 4-52. Repeater Reset Menu

Chapter 5

Monitoring and Diagnostics

This chapter describes the ASMi-52 diagnostic functions, which include:

- Status indications, alarms, power-up self-test
- Statistics collection
- Bit Error Rate Test (BERT)
- Diagnostic tests (loopbacks and LEDs test).

5.1 Monitoring Performance

Displaying SHDSL Statistics

ASMi-52 has capabilities to collect SHDSL performance statistics. The statistics data is collected for the current 15-minute interval or current day. In addition ASMi-52 displays a statistics report for the last 96 intervals or the last seven days, elapsed since the last modem power-up.

Displaying the Current SHDSL Statistics

SHDSL performance statistics for the current 15-minute interval and for the current 24-hour interval can be displayed.

► To display the current SHDSL statistics:

1. From the Monitoring menu, select **Physical Ports Statistics** (Main menu > Monitoring > Physical Ports Statistics).

The Physical Port Statistics menu appears (see [Figure 5-1](#)).

```
ASMi - 52
Physical Port Statistics
1.  SHDSL port performances ...
2.  E1 port performances ...
3.  Bert performance.....
>
ESC-prev. menu; !-main menu; &-exit; @-scroll
```

Figure 5-1. Physical Port Statistic Menu

2. From the Physical Port Statistics menu, select **SHDSL Port Performances** to display the unit's SHDSL statistics.

The SHDSL Port Performances menu appears (see [Figure 5-2](#)).

```

                                ASMi-52
SHDSL Port Performances
1.  SHDSL current performances ...
2.  SHDSL all intervals local performances ...
3.  SHDSL all intervals remote performances ...
4.  SHDSL current day performances ...
5.  SHDSL all days local performances ...
6.  SHDSL all days remote performances
7.  SHDSL clear performances
>
ESC-prev. menu; !-main menu; &-exit; @-scroll

```

Figure 5-2. SHDSL Port Performances Menu

3. From the SHDSL Port Performances menu, select:
 - **SHDSL Current Performances** to display the current SHDSL statistics
 - **SHDSL Current Day Performances** to display the current day statistics.

The SHDSL Performance screen appears (see [Figure 5-3](#) and [Figure 5-4](#)).

4. Press **<Enter>** to refresh the display or press **<Esc>** to exit the SHDSL Performance screen.

ASMi-52				
<u>SHDSL current performances</u>				
	Local A	Local B	Remote A	Remote B
Port number (1)				
Current ES	(0)	(0)	(0)	(0)
Current UAS	(0)	(0)	(0)	(0)
Current SES	(0)	(0)	(0)	(0)
Current LOSWS	(0)	(0)	(0)	(0)
Current CRC anomalies	(0)	(0)	(0)	(0)
Current Timer	(578 sec)	(578 sec)	(578 sec)	(578 sec)
Current noise margin	(16 dB)	(16 dB)	(16 dB)	(16 dB)
Current line attenuation	(0.4 dB)	(0.4 dB)	(0.4 dB)	(0.4 dB)
Current transmit power	(8.5 dBm)	(8.5 dBm)	(8.5 dBm)	(8.5 dBm)
>				
ESC-prev. menu; !-main menu; &-exit; @-scroll				

Figure 5-3. SHDSL Current Performances Screen

ASMi-52				
<u>SHDSL current day performances</u>				
	Local A	Local B	Remote A	Remote B
Port number	(1)	(1)	(1)	(1)
24 hour ES	(1)	(1)	(1)	(1)
24 hour UAS	(1401)	(1401)	(1401)	(1401)
24 hour SES	(0)	(0)	(0)	(0)
24 hour LOWS	(0)	(0)	(0)	(0)
24 hour CRC anomalies	(3)	(3)	(3)	(3)
Current Day Timer	(22280sec)	(22280sec)	(22280sec)	(22280sec)
Day Intervals	(24)	(24)	(24)	(24)
ESC-prev. menu; !-main menu; &-exit; @-scroll				

Figure 5-4. SHDSL Current Day Performances Screen

Table 5-1. SHDSL Statistics Parameters

Display	Description
Current ES	Number of errored seconds in which one or more CRC (Cyclic Redundancy Check) error events occurred during the current interval. This value is updated every second.
Current UAS	Number of unavailable seconds in which a failed signal occurred during the current interval. This value is updated every second.
Current SES	Number of severely errored seconds in which 832 or more CRC error events occurred during the current interval. This value is updated every second.
Current LOSWS	Number of seconds with loss of sync word during the current interval. This value is updated every second.
Current CRC anomalies	Number of CRC error events recorded since the last time the register was cleared.
Current TIMER	Time in seconds from the beginning of the interval. This value is updated every second.

Displaying the SHDSL Statistics for all Intervals

You can display a detailed SHDSL performance statistics for 96 last 15-minute intervals or seven last days (24 hours) intervals elapsed since the last power-up.

► To display the SHDSL statistics for all intervals:

1. From the SHDSL Port Performances menu (see [Figure 5-2](#)), select **SHDSL All Intervals Local Performances/SHDSL All Intervals Remote Performances** to display the SHDSL statistics for 15-minute intervals or select **SHDSL All Days Local Performances/SHDSL All Days Remote Performances** to display the SHDSL statistics for day intervals.

The SHDSL All Intervals screen appears (see [Figure 5-3](#) and [Figure 5-4](#)).

2. Press any key to return to the SHDSL Port Performances menu.

ASMi-52													
SHDSL all intervals local/remote performances ...													
Line A							Line B						
INT	CRC	LOSWS	ES	SES	UAS		CRC	LOSWS	ES	SES	UAS		
ESC-prev. menu; !-main menu; &-exit; ?-help; @-scroll													

Figure 5-5. SHDSL All Intervals Local/Remote Performances

ASMi-52													
SHDSL all days local/remote performances ...													
Line A							Line B						
DAY	CRC	LOSWS	ES	SES	UAS		CRC	LOSWS	ES	SES	UAS		
ESC-prev.menu; !-main menu; &-exit; ?-help; @-scroll													

Figure 5-6. SHDSL All Days Local/Remote Performances

Clearing the SHDSL Performance Statistics

- To clear the SHDSL Port Performance statistics:
 - From the SHDSL Port Performances menu (see [Figure 5-2](#)), select **SHDSL Clear Local Performances** or **SHDSL Clear Remote Performances**, and press <Enter>.

All SHDSL statistics data are cleared.

Displaying E1/T1 Statistics

When ASMi-52 includes a G.704 E1/T1 port configured to the G732N framing, the modem has the capabilities to collect E1/T1 performance diagnostics. Statistics collection depends on the use of the CRC-4 function for E1 and T1:

- CRC-4 Enabled (E1), ESF framing (T1)

When the CRC-4 functions are enabled, it is possible to monitor end-to-end data transmission performance. Error detection is derived from the data payload by performing a cyclic redundancy check (CRC). The resulting CRC checksum is transmitted in addition to the raw data bits. The receiving end recalculates the checksum and compares the results with the received checksum: any difference between the two checksums indicates that one or more bits are contained in the current data block being evaluated.
- CRC-4 Disabled (E1), SF framing (T1)

When the CRC-4 option is disabled, ASMi-52 does not support the capabilities listed above. However, the modem is capable of providing statistics of bipolar violations.

- Note**
- For details on enabling the CRC-4 function, refer to [Chapter 4](#).
 - For the details on configuring T1 framing, refer to [Configuring T1 Interface](#) in [Chapter 4](#).

Displaying the Current E1/T1 Statistics

► To display the current E1/T1 statistics:

1. From the Physical Port Statistics menu ([Figure 5-1](#)), select **E1/T1 Port Performances** to display the local/remote unit E1/T1 statistics.

The E1/T1 Port Performances menu appears (see [Figure 5-7](#)).

2. From the E1/T1 Port Performance menu, select **E1/T1 Current Performances** to display the current E1/T1 statistics or select **E1/T1 Current Day Performances** to display the current day statistics.

The E1/T1 Port Performances screen appears (see [Figure 5-8](#), and [Figure 5-9](#)).

3. Press any key to exit the E1/T1 Performances screen.

```

ASMi-52
E1/T1 Port Performances
1.  E1/T1 current performances ...
2.  E1/T1 all intervals local performances ...
3.  E1/T1 all intervals remote performances ...
4.  E1/T1 current day performances ...
5.  E1/T1 clear local performances
6.  E1/T1 clear remote performances
>
ESC-prev. menu; !-main menu; &-exit; @-scroll

```

Figure 5-7. E1/T1 Port Performances Menu

If CRC-4 is disabled, a typical E1/T1 Current Performance screen will include only BPV statistics, as shown in [Figure 5-8](#) and [Figure 5-9](#).

```

ASMi-52
E1/T1 current performances
      Local              Remote
Port number (1)
BPV last minute   (0)          (0)
ESC-prev. menu; !-main menu; &-exit; @-scroll

```

Figure 5-8. E1/T1 Current Performances Screen

```

ASMi - 52
E1/T1 current day performance
      Local              Remote
Port number (1)
No statistics collection

ESC-prev. menu; !-main menu; &-exit; @-scroll

```

Figure 5-9. E1/T1 Current Day Performances Screen

Table 5-2. E1/T1 Statistics Parameters

Display	Description	Range	
		15 min	24 hour
CRC errors	Number of CRC error events recorded since the last time the register was cleared.	–	–
CRC avrg errors	The average number of CRC events per second. This value is updated every second.	–	–
Current ES	Number of errored seconds in which one or more CRC (Cyclic Redundancy Check) error events occurred during the current interval. This value is updated every second for 15-minute interval or every 15 minute for 24-hour interval.	0–900	0–65535
Current SES	Number of severely errored seconds in which 832 or more CRC error events occurred during the current interval. This value is updated every second for 15-minute interval or every a 15 min. for a 24-hour interval.	0–900	0–65535
Current UAS	Number of unavailable seconds in which a failed signal occurred during the current interval. This value is updated every second for a 15-minute interval or every a 15 min. for 24-hour intervals.	0–900	0–65535
Current BES	Number bursty errored seconds, in which 2 to 831 CRC error events occurred during the current interval. This value is updated every second.	0–900	0–65535
Current LOFC	Number of loss of frame alignment events measured during the current interval. This value is updated every second for 15-minute interval or every 15 min. for 24-hour interval.	0–255	0–255
Current CSS	Number of seconds with one or more controlled slip events measured during the current interval. This value is updated every second for a 15-minute interval or every 15 min. for a 24-hour interval.	0–255	0–255
24 hour degrade minute	Total number of degraded minutes in the current 24-hour interval. A degraded minute is a minute in which the BER exceeded 1×10^{-6} . This value is updated every minute.	–	0–1440
24 hour last degrade minute	Total number of degraded minutes in the last 24-hour interval. This value is updated every 24 hours.	–	0–1440

Table 5-2. . E1 Statistics Parameters (Cont.)

Display	Description	Range	
Current DM	Number of degraded minutes in which the BER exceeded 1×10^{-6} . This value is updated every minute for 15-minute interval or every 24 hours for 24-hour interval.	0-1440	0-1440
BPV last minute	Number of bipolar violation events detected in the last minute. This value is updated every minute.	0-1000	0-1000
BPV max minute	Number of bipolar violation events detected in the worst minute since the last resetting of the BPV counter. This value is updated every minute.	0-1000	0-1000
Current TIMER	Time in seconds from the beginning of the interval. This value is updated every second. For 24-hour interval – number of 15 minutes intervals the device has been working after power up	0-900	0-96

Displaying E1/T1 Statistics for All Intervals

You can display detailed E1/T1 performance statistics for 96 last 15-minute intervals elapsed since the last power-up.

► **To display E1/T1 statistics for all intervals:**

1. From the E1 Port Performances menu, select **E1/T1 All Intervals Local Performances** or **E1/T1 All Intervals Remote Performances** (Main menu > Monitoring > Physical Ports Statistics > E1/T1 Port Performances > E1/T1 All Intervals Local/Remote Performances) to display the E1/T1 statistics for all 15-minute intervals.

The E1/T1 All Intervals Local/Remote Performances screen appears (see [Figure 5-10](#)).

2. Press any key to exit the E1/T1 All Intervals Local/Remote Performances screen.

ASMi-52							
<u>E1/T1 all intervals local/remote performances ...</u>							
INTERVAL	ES	SES	UAS	BES	LOFC	CSS	DM
ESC-prev. menu; !-main menu; &-exit; @-scroll; ?-help							

Figure 5-10. E1/T1 All Intervals Local/Remote Performances

Clearing the E1/T1 Statistics

➤ To clear E1/T1 statistics:

- From the E1 Port Performances menu (see [Figure 5-2](#)), select **E1/T1 Clear Local Performances** or **E1/T1 Clear Remote Performances** (Main menu > Monitoring > Physical Port Statistics > E1 Port Performances > E1/T1 Clear Local/Remote Performances), (see [Figure 5-7](#)).

All E1 statistics data are cleared.

5.2 Detecting Errors

Power-Up Self-Test

ASMi-52 performs a hardware self-test upon power-up. The self-test sequence checks the critical circuit functions of the modem.

The results of the hardware self-test for the local or remote ASMi-52 are displayed in the System Status and Physical Status Port screens (see [Chapter 4](#)).

Front Panel LEDs

The status of ASMi-52 is indicated by the ALM, TST and SYNC LED indicators located on the front panel. For the description of LEDs and their functions, refer to [Chapter 3](#).

5.3 Handling Events

ASMi-52 detects fault conditions and initiates alarms to alert the user. ASMi-52 supports the following alarm types:

- System alarms, relating to the ASMi-52 chassis
- Port alarms, relating to a specific interface (SHDSL or DTE)
- Information messages (warnings)
- Events that trigger alarm activation.

ASMi-52 maintains two separate displays for the system and port alarms. In addition, the modem supports a local log file, holding up to 100 alarms.

An alarm or warning simultaneously activates the alarms display and generates a log file, and the ALM LED turns on to indicate the condition. When the fault condition that caused the alarm is cleared, the alarm is removed from the alarm screen, but remains in the log file, enabling you to view the alarm history. Events are generated into the log file.

Displaying All Alarms

ASMi-52 allows you to display all alarms, irrespective of their origin (system or port).

➤ **To display all alarms:**

1. From the Main menu, select **Monitoring**.

The Monitoring menu appears (see [Figure 5-11](#)).

2. From the Monitoring menu, select **Total Alarms**.

The Total Alarms Screen appears (see [Figure 5-12](#)).

The display of the alarms screen includes the source of alarm (local or remote device), name of the alarm, its number, severity (major or minor) and status (always ON), see [Figure 5-12](#).

Once the event that caused the alarm is cleared, the ALM indicator turns off.

3. Press **<Enter>** to refresh the display.

```

                                ASMi-52
Monitoring
1. Total alarms                      <[]
2. System monitoring                 <
3. Physical ports status              <
4. Physical ports statistics          >
5. Open virtual connection
>
ESC-prev. menu; !-main menu; &-exit; @-scroll

```

Figure 5-11. Monitoring Menu

```

                                ASMi-52
Total alarms

Source      Name                      Num      Severity  Status
Remote 1    PSD NOT CONNECTED        8        MAJOR     ON
>

ESC-prev. menu; !-main menu; &-exit; @-scroll

```

Figure 5-12. Total Alarms Screen

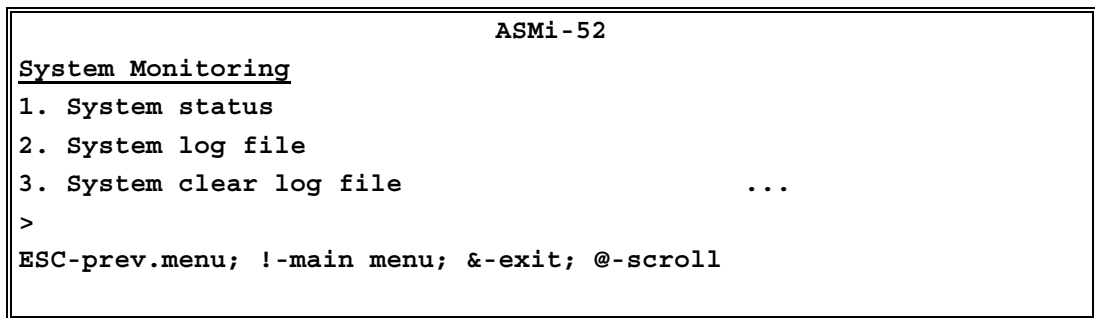


Figure 5-13. System Monitoring Menu

Working with the System Log File

ASMi-52 maintains system alarm buffer, which can store up to 100 system alarm messages. The system log file specifies alarm or event name, severity (major or minor), status (ON or OFF), and the time elapsed since the last ASMi-52 reset.

► To display the system log file:

- From the System Monitoring menu ([Figure 5-13](#)), select **System Log File** (Main menu > Monitoring > System Monitoring > System Log File).

The System Log File screen appears.

► To clear the system log file:

- From the System Monitoring menu ([Figure 5-13](#)), select **System Clear Log File** (Main menu > Monitoring > System Monitoring > System Clear Log File) to clear the log file.

A confirmation message is displayed at the bottom of the screen.

- Type **Y** and press **<Enter>**.

All the system log file entries are deleted from the log file.

Displaying the Port Status

- Follow the Monitoring menu, select **Physical Port Status** (Main menu > Monitoring > Physical Port Status).

The Physical Ports Status menu appears.

- From the Physical Ports Status menu, select one of the following (see [Figure 5-14](#)):

- **Port Status** to display the port status
- **Line Mask** for the line mask
- **Port Log File** to display the log file of the port
- **Port Clear Log File** to clear the log of the log file.

```

ASMi-52
Physical port status
Port Number      (1)
1. Port status
2. Line mask      (NO_MASK)
3. Port log file
4. Port clear log file
>
ESC-prev. menu; !-main menu; &-exit; @-scroll

```

Figure 5-14. Physical Port Status Menu

Masking Port Alarms

ASMi-52 allows you to mask alarms generated by local and remote devices.

► **To mask ASMi-52 alarms:**

- From the Physical Port Status menu (*Figure 5-14*), select **Line mask** (Main menu > Monitoring > Physical Port Status > Line Mask).

The Line Mask value changes to Mask. ASMi-52 starts ignoring all alarms generated devices connected to the modem.

Table 5-3. ASMi-52 Alarms and Warnings

No.	Terminal Message	Port	Description	Severity
1	SELF TEST ERROR	–	Failure occurred during self-test	Major
2	SOFTWARE DOWNLOAD	–	Software download is in progress	Warning
4	LLB FROM DTE	DTE	Local loopback has been activated by a physical connector (units with V.35 DTE interface only)	Warning
5	RLB FROM DTE	DTE	Remote loopback has been activated by a physical connector (units with V.35 DTE interface only)	Warning
6	PROP PROT FAIL	SHDSL	FE Management by EOC failed	Warning
8	LAN NOT CONNECTED	DTE	The Ethernet interface is not connected to the LAN	Major
9	LOOP ATTN. OVER LINE A	SHDSL	Line A loop attenuation has exceeded the alarm threshold	Minor
10	LOOP ATTN. OVER LINE B	SHDSL	Line B loop attenuation has exceeded the alarm threshold (4-wire units only)	Minor
11	SNR MARGIN OVER LINE A	SHDSL	Line A signal-to-noise margin has exceeded the alarm threshold	Minor
12	SNR MARGIN OVER LINE B	SHDSL	Line B signal-to-noise margin has exceeded the alarm threshold (4-wire units only)	Minor
13	LOSW FAILURE OVER LINE A	SHDSL	Loss of Sync Word is detected on line A	Minor

No.	Terminal Message	Port	Description	Severity
14	LOSW FAILURE OVER LINE B	SHDSL	Loss of Sync Word is detected on line B (4-wire units only)	Minor
15	DATA RATE NOT COMPATIBLE	DTE	Mismatch in the line rate and data rate. Applicable for the ASMi-52 units with V.35 interface, operating in adaptive rate mode	Major
16	PSD NOT COMPATIBLE	SHDSL	Mismatch between PSD mode selected by the user and PSD mode used by the line	Minor
17	SYNC LOSS LINE A	SHDSL	SHDSL line A is not synchronized	Major
18	SYNC LOSS LINE B	SHDSL	SHDSL line B is not synchronized (4-wire units only)	Major
19	MNGNT IS DOWN	SHDSL	The management link between local and remote units is down	Major
21	CRC ERROR OVER LINE A	SHDSL	Excessive CRC-6 errors have been detected on SHDSL line A	Minor
22	CRC ERROR OVER LINE B	SHDSL	Excessive CRC-6 errors have been detected on SHDSL line B (4-wire units only)	Minor
23	NO DTE INTERFACE	DTE	No DTE interface is detected	Major
24	IR RATE NOT COMP	DTE	IR rates are not compatible	Major
25	E1 REMOTE FAILURE T1 REMOTE FAILURE	DTE	Red alarm is detected at the remote E1 or T1 port	Major
26	E1-TS NOT RATE COMP T1-TS NOT RATE COMP	DTE	Current line rate does not support the number of assigned E1 or T1 timeslots	Major
27	E1 SIGNAL LOSS T1 SIGNAL LOSS	DTE	E1 or T1 loss is detected at the DTE port	Major
28	E1 BPV ERR EXC T1 BPV ERR EXC	DTE	E1 or T1 bipolar violation errors exceed the threshold	Minor
29	E1 FRAME SLIP EXC	DTE	E1 frame slips exceed the threshold	Minor
30	E1 EXCECIVE BPV T1 EXCECIVE BPV	DTE	Bipolar violations rate exceeds 1×10^{-6} during the last 1000 seconds	Major
31	E1 CRC-4 EXC	DTE	CRC-4 errors exceed the threshold	Minor
32	E1 EXCESIVE ERR RATIO T1 EXCESIVE ERR RATIO	DTE	The bit error rate of the link exceeds 10^{-3}	Major
33	E1 AIS OCCURED T1 AIS OCCURED	DTE	AIS is detected at the E1 or T1 port	Major
34	E1 AIS AND SYNC LOSS T1 AIS AND SYNC LOSS	DTE	AIS and loss of frame alignment are detected at the E1 or T1 port	Major
35	E1 SYNC LOSS T1 SYNC LOSS	DTE	E1 or T1 loss of frame synchronization occurred	Major

No.	Terminal Message	Port	Description	Severity
36	E1 CRC MF EXC	DTE	CRC errors detected in the frame synchronization signal exceeded the threshold	Minor
37	E1 REMOTE SYNC LOSS T1 REMOTE SYNC LOSS	DTE	Remote loss of frame synchronization occurred	Major
38	E1 MF SYNC LOSS	DTE	Local loss of frame synchronization	Major
39	E1 MF REMOTE SYNC LOSS	DTE	Remote loss of frame synchronization	Major
40	E1 TS NOT X128 T1 TS NOT X128	DTE	Number of timeslots assigned for the ASMi-52 unit with 4-wire line interface is not nx128	Major
41	E1 TS NOT COMP T1 TS NOT COMP	DTE	Number of timeslots assigned for the local unit does not match the number of timeslots assigned for the remote unit.	Major
42	WIRE MODE NOT COMP	SHDSL	Mismatch between line interface types (2/4-wire) between local and remote units	Major
43	SPAN IS NOT FULL	SHDSL	The distance between adjacent repeaters is too long. You can identify the problematic segment by checking the Port Status screen. In the Number of Repeaters line, it displays the last repeater identified by ASMi-52. This means that the distance between the last detected repeater and the next repeater exceeds its maximum range.	Major
44	LOOP ATTN. OVER NETWORK SIDE	SHDSL	Loop attenuation at the network side of the repeater has exceeded the alarm threshold	Major
45	LOOP ATTN. OVER CUSTOMER SIDE	SHDSL	Loop attenuation at the customer side of the repeater has exceeded the alarm threshold.	Major (all)
46	SNR MARGIN OVER NETWORK SIDE	SHDSL	Signal-to-noise margin at the network side of the repeater has exceeded the alarm threshold.	Major (all)
47	SNR MARGIN OVER CUSTOMER SIDE	SHDSL	Signal-to-noise margin at the customer side of the repeater has exceeded the alarm threshold	Major (all)
48	LOSW FAILURE OVER NETWORK SIDE	SHDSL	Loss of Sync Word is detected at the network side of the repeater.	Major (all)
49	LOSW FAILURE OVER CUSTOMER SIDE	SHDSL	Loss of Sync Word is detected at the customer side of the repeater.	Major (all)

No.	Terminal Message	Port	Description	Severity
50	LINE PARAMERS NOT COMP	SHDSL	Modems fail to synchronize due to the configuration parameters mismatch. For example: - The modems operate in the adaptive mode (Line Prob is set to Adaptive Rate) and the distance between them exceeds the maximum range. - ASMi-52 with a V.35 interface operates opposite a remote unit with an E1 interface. If the modem V.35 is set to the data rate which is not supported by the remote unit, e.g. 2304 kbps, the units will not synchronize.	Major
51	EXTERNAL TO INTERNAL CLOCK	DTE	The device is in the external clock, but the clock is not connected.	Major
52	LOOP ATTN. OVER NETWORK SIDE	SHDSL	Loop attenuation at the network side of the Line B repeater has exceeded the alarm threshold.	Major
53	LOOP ATTN. OVER CUSTOMER SIDE – LINE B	SHDSL	Loop attenuation at the customer side of the Line B repeater has exceeded the alarm threshold.	Major (all)
54	SNR MARGIN OVER NETWORK SIDE – LINE B	SHDSL	Signal-to-noise margin at the network side of the Line B repeater has exceeded the alarm threshold.	Major (all)
55	SNR MARGIN OVER CUSTOMER SIDE – LINE B	SHDSL	Signal-to-noise margin at the customer side of the Line B repeater has exceeded the alarm threshold.	Major (all)
56	LOSW FAILURE OVER NETWORK SIDE – LINE B	SHDSL	Loss of Sync Word is detected at the network side of the Line B repeater.	Major (all)
57	LOSW FAILURE OVER CUSTOMER SIDE – LINE B	SHDSL	Loss of Sync Word is detected at the customer side of the Line B repeater.	Major (all)
58	LAN RATE NOT COMP	LAN	LAN rates are not compatible	Major

Table 5-4. ASMi-52 Events

Terminal Message	Description
CRC EVENT LINE A	CRC errors are detected on line A
CRC EVENT LINE B	CRC errors are detected on line B
SW DOWNLOAD FAIL	Software download failed
BUFFER OVERFLOW	More than 100 entries registered in the log file
WD RESET FROM GS	Watchdog error from the SHDSL chipset
GS OUT OF SYNC ABORT	SHDSL framer out of sync
GS LOSS OF CARRIER DETECT	SHDSL carrier loss
GS SQ ERROR DETECT	SHDSL signal quality value is more than 22.7 dB

Terminal Message	Description
GS CRC ERROR DETECT	More than three SHDSL CRC errors were detected during the last second
REP SEGD ERROR DETECT	SEGD error from repeater: sync fail on another part of the span
TRAINING MODE STACK	CPE Training state timeout is exceeded (3 min)
DEVICE PRIMARY CALL FAIL	The primary number dial attempt has failed
DEVICE DIAL CALL FAIL	The dial out call cycle has failed

Working with the Port Log File

ASMi-52 maintains a port alarm buffer, which can store up to 100 alarm messages. The port log file specifies alarm or event name, severity (major or minor), status (ON or OFF), and time elapsed since the last ASMi-52 reset.

► To display the log file:

- From the Physical Port Status menu, select **Port Log File** (Main menu > Monitoring > Physical Ports Status > Port Log File).

The Log File screen appears (see [Figure 5-15](#)).

ASMI 52			
<u>Port log file</u>			
Source Name	Severity	Status	Time
1. Local MNGMNT IS DOWN	MAJOR	ON	0:00:00
2. Local E1 SYNC LOSS LINE A	MAJOR	ON	0:00:00
3. Local E1 SIGNAL LOSS	MAJOR	ON	0:00:00
4. Local SYNC LOSS LINE A	MAJOR	ON	0:00:00
5. Local E1 SYNC LOSS	MAJOR	OFF	0:11:48
6. Local E1 SIGNAL LOSS	MAJOR	OFF	0:11:48
7. Local SYNC LOSS LINE A	MAJOR	OFF	0:23:22
8. Local MNGMNT IS DOWN	MAJOR	OFF	0:24:25
9. Remote LAN NOT CONNECTED	MAJOR	ON	0:24:29
ESC-prev. menu; !-main menu; &-exit; @-scroll; ?-help			
1 user(s)			

Figure 5-15. Port Log File Screen

► To clear the log file:

- From the Physical Port Status menu, select **Port Clear Log File** (Main menu > Monitoring > Physical Port Status > Port Clear Log File) to clear the log file.

A confirmation message is displayed at the bottom of the screen.

- Type **Y** and press **<Enter>**.

All the log file entries are deleted from the log file.

Handling Traps

ASMi-52 supports SNMP traps for the following events:

- Cold start
- Warm start
- Link up
- Link down
- Authentication failure
- TFTP status change
- Agent status change
- Modem Rack Alarm

The list of traps is given in [Table 5-5](#).

Table 5-5. Trap List

Trap	Description	OID
coldStart	The unit has been restarted (powered up), and successfully completed the cold-start process	1.3.6.1.6.3.1.1.5.1
coldStart	The unit ASMi-52 has been restarted and successfully completed the warm-start process	1.3.6.1.6.3.1.1.5.2
authenticationFailure	User authentication has failed	1.3.6.1.6.3.1.1.5.5
linkDown	An uplink, tributary or user port has been disconnected	1.3.6.1.6.3.1.1.5.3
linkUp	An uplink, tributary or user port has been connected	1.3.6.1.6.3.1.1.5.4
rad.tftpStatusChangeTrap	TFTP session status has changed	1.3.6.1.4.1.164.6.1.0.1
rad.agnStatusChangeTrap	SNMP agent status has changed	1.3.6.1.4.1.164.6.1.0.2
rad.modmRackAlarm	An alarm occurred in the system	1.3.6.1.4.1.164.3.4.0.14

5.4 Troubleshooting

Use the chart shown in [Table 5-6](#) to identify and remedy problems in unit operation.

Table 5-6. Troubleshooting Chart

Fault	Probable Cause	Remedial Action
Power led off	No power supplied to unit	• Check power source. • Check power cable connected and correctly wired.
Ethernet Link Led off	• No Ethernet Link detected • Ethernet ports of the ASMi-52 and user equipment are not in the same rate or duplex mode	• Check cable connected and correctly wired. • Check the user's and ASMi-52 Ethernet port configuration (negotiation, rate, duplex mode). • Use Event Log File to check events.
No traffic flow between two units	Configuration or logical layer problems	• Use System Interface Status screen for assistance. All active ports that show Activation-Up, should show Operation-Up. • Use Event Log File to check events. • Check the ASMi-52 configuration and, if necessary, other ASMi-52 parameters.
Partial Traffic Flow	Timing configuration is not properly set	• Check timing settings.

5.5 Performing Diagnostic Tests

The user-controlled test functions of ASMi-52 consist of the loopback tests and LEDs test. The purpose of these tests is to determine the source of a break in the data flow.

Note

- *Both local and remote ASMi-52 units must be configured and synchronized properly to allow remote loopback activation.*
- *Only one loopback can be activated at a time, either on the local or remote unit.*

Running the Bit Error Rate Test (BERT)

It is possible to generate BERT+RLB or BERT (from either local or remote devices) in any ASMi-52 model (excluding ASMi-52/ETH).

The BERT, RLB + BERT can be set only if there is a connection to the FE unit.

The following are the BERT test patterns that can be selected:

- 2E15-1
- Mark
- Space
- Alternate

BERT has a possible Single Error injection only.

The BERT performance counters are as follows:

- Error bits – the total number of bit errors detected
- BERT total time – the total time the test is running in seconds
- Bert error time – the total number of seconds in which errors have been detected – in seconds
- BERT Sync Loss – the number of times Sync Loss was detected since BERT started to run
- BERT result – the number of error bits divided with the total number of data bits. This item holds 1 byte for the exponent and 2 bytes for the mantissa holding 1 byte before the period and 1 byte after the period
- BERT Sync Loss state – the Sync Status while BERT runs. The BERT Sync Loss state has the following values:
 - SyncLoss = 0
 - Sync = 1
- BERT sync run time – the total number of seconds in which sync have been detected – in seconds
- BERT total bits – the total number of bert bit.

➤ **To select the BERT patterns values for Local and Remote tests:**

1. From the Diagnostics menu, select **Local/Remote Test** (Main menu > Monitoring > Local/Remote Test).

The Local/Remote Test menu is displayed (see [Figure 5-23](#)).

2. From the Local/Remote Test menu, select **BERT**.

The BERT menu is displayed.

```

ASMi - 52

Bert
Bert                                (ON/OFF)
Bert + RLB                          (ON/OFF)
Bert pattern                        >
Save Bert parameters
>

ESC-prev. menu ; !-main menu ; &-exit terminal

```

Figure 5-16. BERT Menu

- From the Bert menu, select **Bert Pattern** (see [Figure 5-16](#)).

The Bert Pattern selection is displayed (see [Figure 5-17](#)).

```

ASMi - 52

Bert Pattern
>
2E15-1
Mark
Spare
Alternate

ESC-prev. menu ; !-main menu ; &-exit terminal

```

Figure 5-17. BERT Pattern Menu

► To configure the BERT results:

- From the Monitoring menu, select **Physical Port Statistics** (Main menu > Monitoring > Physical Port Statistics).

The Physical Port Statistics menu is displayed, (see [Figure 5-1](#)).

- From the Physical Port Statistics menu, select **Bert Performance**.

The Bert Performance menu is displayed, (see [Figure 5-18](#)).

```

ASMi - 52

Bert Performances
1. Bert results
2. Inject single error local
3. Inject single error remote
4. Bert clear local performance
5. Bert clear remote performance
>

ESC-prev. menu; !-main menu ; &-exit terminal

```

Figure 5-18. Bert Performance Menu

- From the Bert Performances menu, select **Bert Results**.

The Bert Result window is displayed, (see [Figure 5-19](#))

ASMi-52		
<u>Bert Results</u>		
	Local	Remote
Run time (seconds)	2000	
Sync loss state	sync loss	
Sync run time (seconds)	2000	
Sync loss counter	2000	
Total bits	3000	
Error bits	50	
BER	5.5E-4	
>		
ESC-prev. menu; !-main menu ; &-exit terminal		

Figure 5-19. Bert Results Menu

4. Configure the local/remote port accordingly.

Running Loopback Tests

ASMi-52 supports the local and remote loopbacks as per ITU V.54, by using the following methods:

From the supervisory terminal.

Via corresponding pins of the synchronous interface, for the ASMi-52 with V.35 interface and RS-530 interfaces only.

Loopback in Multiplexer Units

Figure 5-20 is an illustration of how loopback works in the local ASMi-52.

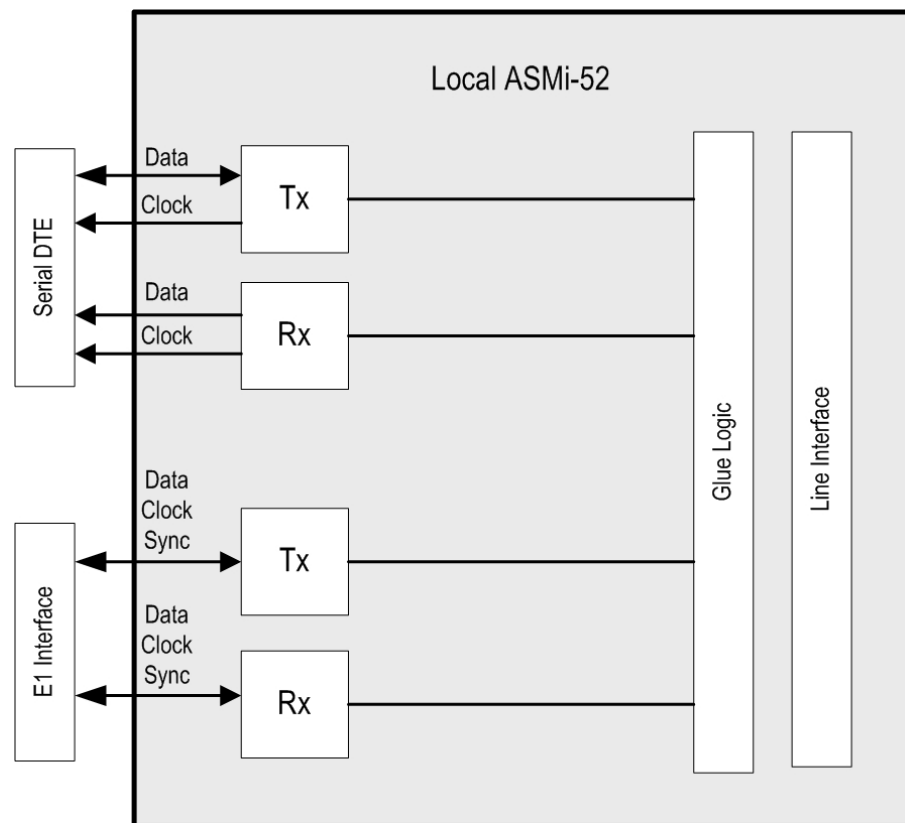


Figure 5-20. Loopback with Multiplexer Units

Running the Local Loopback

The local loopback (LLB) checks the performance of the local ASMi-52 modem, the local DTE and the connection between them (see [Figure 5-21](#)). The LLB can be performed separately on the local and remote modems.

ASMi-52 allows you to set the loopback timeout causing the LLB to deactivate automatically after the required period of time.

Note

Timeout set to 0 (zero) is endless. Avoid setting timeout to 0 as the local control is lost during LLB.

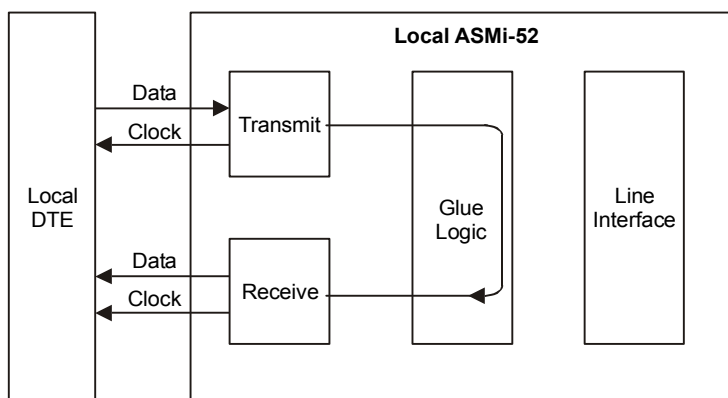


Figure 5-21. Local Loopback

► **To run the local loopback:**

1. From the Main menu, select **Diagnostics**.

The Diagnostics menu is displayed (see [Figure 5-22](#)).

2. From the Diagnostics menu, select:

- **Local Test** to run the LLB on the local ASMi-52
- **Remote Test** to run the LLB on the remote ASMi-52.

The Local/Remote Test menu appears (see [Figure 5-23](#)).

3. Select **LLB**.

The LLB value in parenthesis changes to ON. Also, an additional parameter, *Loop Timeout*, is displayed for the local ASMi-52.

4. Select **Loop Timeout**, if you want to set loopback timeout (in minutes).

The Loop Timeout value changes.

Note

Avoid setting timeout to 0 as local control is lost during LLB. 0=Forever

5. Once you selected the loopback timeout, select **Save** to activate the LLB.

The LLB is initiated. The TST indicator lights up and the ASMi-52 units lose synchronization.

```

                                ASMi-52

Diagnostics
Local Test      >
Remote Test     >
Repeater Test   >
>

ESC-previous menu ; !-main menu ; &-exit terminal

```

Figure 5-22. Diagnostics Menu

```

                                ASMi-52

Local Test or Remote Test
LLB from DTE:           OFF
RLB from DTE:           OFF
Bert                    >
LLB                     (ON)
Loop Timeout (min) (0-4095) ... (5)
LEDs test
Clear all
Save
>

ESC-previous menu ; !-main menu ; &-exit; @-scroll

```

Figure 5-23. Local/Remote Test Menu

Running the Remote Loopback

The remote loopback (RLB) checks the performance of both the local and remote ASMi-52 modems, and the lines connecting them (see [Figure 5-24](#)).

ASMi-52 allows you to set the loopback timeout causing the RLB to deactivate automatically after the required period of time.

Note

RLB cannot be initiated from a CPE unit if the CO operates with an external clock, and is configured to one of the following data rates:

2-wire: 2112 kbps, 2176 kbps, or 2240 kbps

4-wire: 4224 kbps, 4352 kbps, or 4480 kbps

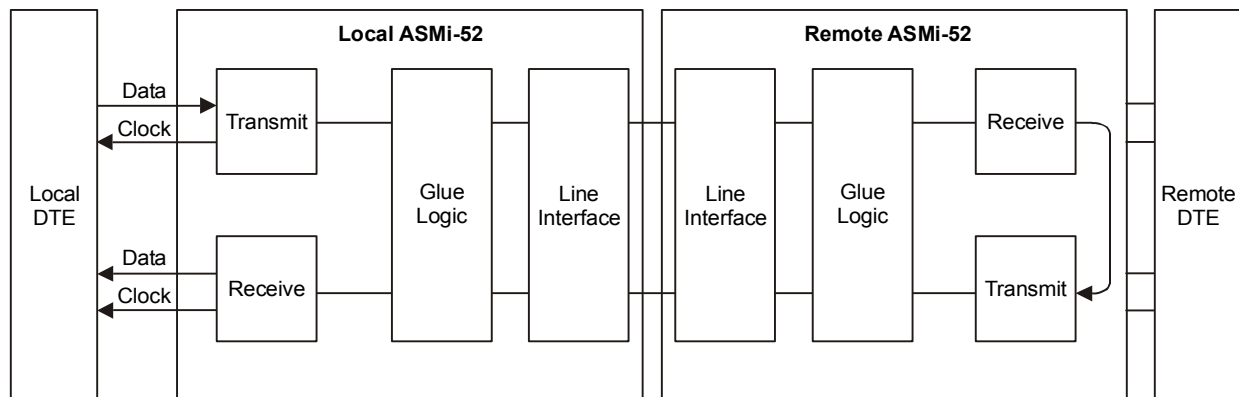


Figure 5-24. Remote Loopback

► To activate the remote loopback:

1. From the Diagnostics menu (see [Figure 5-22](#)), select **Local Test** to run the RLB on the local ASMi-52, or select **Remote Test** to run the RLB on the remote ASMi-52 (Main menu > Diagnostics > Local/Remote Test).

The Local/Remote Test menu is displayed (see [Figure 5-23](#)).

2. Select **RLB**.

The RLB value in parenthesis changes to ON. Also, an additional parameter, *Loop Timeout*, is displayed for the local ASMi-52.

3. Select **Loop Timeout**, if you want to set the loopback timeout (in minutes).

The Loop Timeout value changes.

Note

Loop timeout = 0 is forever!

4. Once you selected the loopback timeout, select **Save** to activate the RLB.

The RLB is initiated. The TST indicators light up on both local and remote units.

Running Remote Loopback at a Repeater

Remote loopback can also be run at an SHDSL repeater installed in the line. The RLB is activated from the CO unit only. The RLB checks the repeater's performance when it is activated, all preceding repeaters, the local ASMi-52 and lines connecting them (see [Figure 5-25](#)).

► **To activate the remote loopback at the SHDSL repeater:**

1. From the Diagnostics menu, select **Repeater Test** (Main menu > Diagnostics > Repeater Test).

The Repeater Test menu appears (see [Figure 5-26](#)).

2. From the Repeater Test menu, select **Repeater Number** and choose a repeater when you intend to activate the RLB Network.
3. From the Repeater Test menu, select **RLB Network**.

The RLB Network value in parenthesis changes to ON. Also, an additional parameter, *Loop Timeout*, is displayed.

4. Once you selected the loopback timeout, select **Save** to activate the RLB Network.

The RLB at the repeater is initiated.

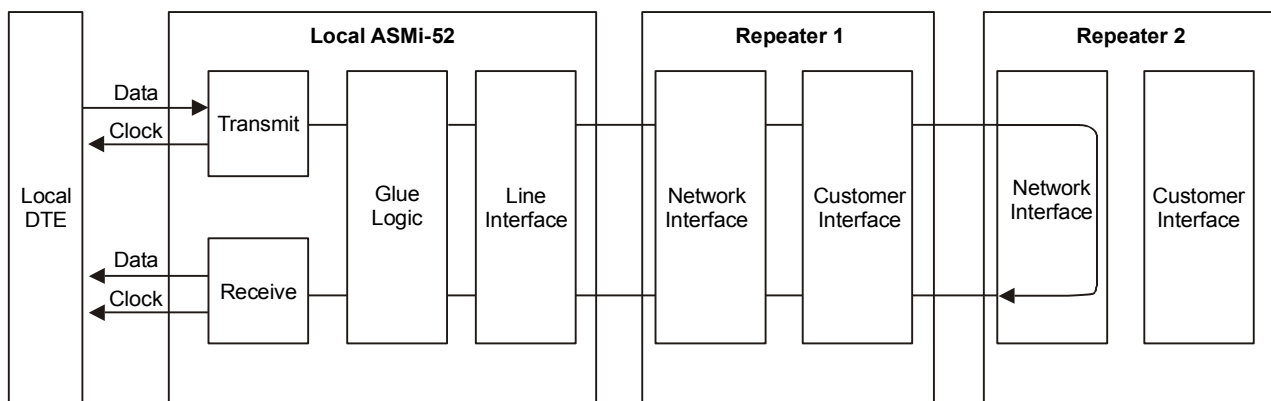


Figure 5-25. Remote Digital Loopback at the SHDSL Repeater

```

ASMi-52
Repeater Test
RLB Network (ON)
Loop Timeout (min) [0 - 4095] ... (5)
Repeater number > (1)
Save
>

ESC-prev. menu; !-main menu ; &-exit

```

Figure 5-26. Repeater Test Menu

Deactivating the Loopbacks

► **To deactivate a running loopback:**

From the Local or Remote Test menu, type the number corresponding to the loopback in progress to change its value from ON to OFF and choose **Save**.

The TST indicator turns off.

➤ **To deactivate multiple loopbacks:**

From the Local or Remote Test menu, select **Clear All**.

The TST indicator turns off.

Running the LEDs Test

The user can perform the front-panel LED test to verify that the local unit indicators are functioning properly.

➤ **To run the LEDs test:**

1. From the Diagnostics menu (see *Figure 5-22*), select **Local Test** (Main menu > Diagnostics > Local Test) to run the LEDs test on the local ASMi-52.

The Local Test menu is displayed (see *Figure 5-23*).

2. Select **LED Test**.

All the front-panel LED indicators light up for two seconds.

5.6 Frequently Asked Questions

Q Can I place an RJ-12 connector in the SHDSL RJ-45 female connector?

- A** Please read the following: <http://en.wikipedia.org/wiki/RJ12>.

Basically, RJ-12 can be plugged into a female RJ-45 connector, and it designed so that the pins in the middle will still be connected. Because RJ-12 has 6 pins and RJ-45 has 8 pins, pins 1 and 8 will not be used.

Answering the question, we can say, yes, you can use an RJ-12 when working with 2W applications (which use only pins 4 and 5 of the RJ-45 connector). If the application is a 4W one, then the answer will be, no, it is not possible, because 4W applications use pins 1 and 2, 4 and 5 (and pin 1 does not match between RJ-45 and RJ-12).

Q Does ASMi-52 comply with UL-1950 and K.21 safety standards?

- A** UL-1950 is an obsolete standard. The new one is UL-60950-1.

ASMi-52 does not have the UL1950 certificate. Nevertheless, ASMi-52 complies with UL1950, meaning that if you make ASMi-52 go through UL1950 certification, it will pass. To run the certification takes around 6 months and the cost is quite significant. If there is a specific project where UL1950 certification is a must, please contact RAD to evaluate it. ASMi-52's line protection is in compliance with the requirements of UL-1950. In fact, this only means that the ASMi-52 has line fuses in the lines.

Regarding K.21, ASMi-52 complies with K.21 and has the certification as well.

Q Can I upgrade ASMi-52 version 1.xx to the latest SW version?

A ASMi-52 with SW versions 1.xx cannot be upgraded to SW version 2.xx (even if you send the unit back to RAD). To work with SW version 2.xx, you must buy new units that support SW version 2.xx.

Q How to provide an external clock when working with X.21 interface?

A In X.21 interface, when working in external clock mode (at the ASMi-52), you will need to provide an external clock through pins 7 & 14

X.21's clock is provided through pins 6 & 13 but this is only from the side of the unit providing the clock, not from the unit receiving it. Therefore, the EXT clock for the ASMi-52 must be provided via pins 7 & 14 (as stated in the user's manual).

Q Why is ASMi-52/ETH not sending EIGRP packets?

A It is correct that there is no real need to define an IP address to the modem if it is working as a bridge. However, with some old versions, a modem without an IP address defined (no matter what IP address actually was) or without default gateway caused user data not to be transferred correctly end to end

Just define the IP address and default gateway to both modems (local and remote), and EIGRP packets will flow through them.

Q Do local and remote ASMi-52 need an IP address to be managed?

A To manage it via SNMP or Telnet, you will need an IP address only for the local unit. The remote unit does not require an IP address; it is managed from the local one. For terminal access, there is no need to define a management IP address.

Q Does ASMi support OAM Ethernet?

A It will transparently transport OAM messages, but it does not deal with them.

Q Is a metal box is the same as Extended Temperature range?

A No. There is confusion that the metal boxes are the only ones that support extended temperature range, and even more, that saying a metal box is the same as saying extended temperature range. This is not true.

To have an ASMi-52 with extended temperature range, you must add at the end of your ordering option "/ETR". That is the only way to obtain an extended temperature range modem.

Both a plastic box and a metallic one can support extended temperature range (as long as the "/ETR" option is added).

Q Is the ASMi-52 modem compatible with 3rd party modem vendors?

A Yes. The chipset, which is installed in the ASMi-52 modems, is Globspan, and the modems are fully compatible with SHDSL standards. Therefore, as long as the modem of the 3rd party vendor is compatible with SHDSL standards, and

the modems are TDM-based and not ATM-based, the modems should work together.

Q What is the meaning of Prop Protocol Fail Alarm?

- A** The "Prop Protocol Fail" Alarm indicates that the local modem has lost management communication with the remote modem. It is an alarm that normally appears when there are error bits on the line, since the first thing affected by this is the EOC (Embedded Operations Channel) which is used for management communication between both modems.

The alarm may be set off due to a noisy line or a line that is close to the maximum reach of the modem at the specific data rate selected. To solve the problem, you can check the configuration of the Power Backoff feature, and see if it is ON. If Power Backoff is ON, then setting it to OFF will cause the modems to transmit at their maximum power, which should improve the Signal to Noise Relation (SNR) and avoid errors with data reception.

Apart from changing the Power Backoff setting, the only other option you have is to decrease the data rate at which the modems are synchronized, or to use a better line.

Q Question: In which cases is it not possible to loop the ASMi-52 modem via the diagnostic screen?

- A** There are two possible reasons why the loops options do not appear in the diagnostic screen:
- The modem has an ETH interface, and since there are no loops in ETH, this option does not exist.
 - When two modems are connected back-to-back and one of them is in loop mode, the other modem cannot access the loop options.

Q What is the ASMi-52 buffer size in the following modes: 1) No QoS is assigned 2) QoS is assigned to the 4 queues?

- A** The ASMi-52 buffer size is 64 frames:
- In case no QoS assigned, all the traffic is mapped to class 1 (size of 64 frames).
 - In case QoS is assigned, there are 4 classes which are actually 4 buffers that can contain 64 frames each.

Q What is the ASMi-52 maximum frame length (MTU)?

- A** The maximum frame length ASMi-52/ETH can forward is 1912 bytes.

5.7 Technical Support

Technical support for this product can be obtained from the local distributor from whom it was purchased.

For further information, please contact the RAD distributor nearest you or one of RAD's offices worldwide. This information can be found at www.rad.com (offices – About RAD > Worldwide Offices; distributors – Where to Buy > End Users).

Chapter 6

Software Upgrade

This chapter explains how to upgrade ASMi-52 to version 2.8.

Software upgrade is required to fix product limitations, enable new features, or to make the unit compatible with other devices that are already running the new software version.

The information includes the following:

- Detailed conditions required for the upgrade
- Any impact the upgrade may have on the system
- Overview of downloading options
- Upgrade via the File Utilities menu
- Upgrade via the Boot menu.

6.1 Compatibility Requirements

Following are the software releases that can be upgraded to version 2.8. The hardware revisions that can accept the software version 2.8 are also listed.

- Software – 2.0 and above
- Hardware – 1.0 and above.

6.2 Impact

ASMi-52 resets automatically after the software upgrade, resulting into up to two minutes of downtime. Upgrade to version 2.8 does not affect any user settings.

6.3 Software Upgrade Options

Application software can be downloaded to ASMi-52 via the TFTP menu (Main Menu > Utilities > File Transfer > TFTP), or via the Boot menu, using XMODEM or TFTP.

6.4 Prerequisites

This section details the ASMi-52 software and versions compatible with version 2.8. It also lists the software file names and outlines system requirements needed for the upgrade procedure.

Software Files

Version 2.8 releases are distributed as software files named ASMI52_2.8x.img. The files can be obtained from the local RAD business partner from whom the device was purchased.

System Requirements

Before starting the upgrade, verify that you have the following:

- For upgrade via TFTP:
 - Operational ASMi-52 unit with valid IP parameters configured for the host
 - Connection to a PC with a TFTP server application (such as 3Cdaemon or PumpKIN), and a valid IP address
 - Software file (ASMI52_2.8x.img) stored on the PC
- For upgrade via XMODEM:
 - Operational ASMi-52 unit
 - Connection to a PC with a terminal emulation application (such as HyperTerminal)
 - Software file (ASMI52_2.8x.img) stored on the PC.

6.5 Upgrading ASMi-52 Software via the File Utilities Menu

The recommended software downloading method is downloading by means of the TFTP, using the *Download/upload using TFTP* menu reached from the File Utilities menu.

Network administrators can use this procedure to distribute new software releases to all the managed ASMi-52 units in the network from a central location.

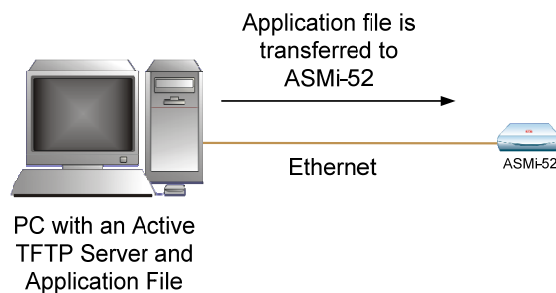


Figure 6-1. Downloading a Software Application File to ASMi-52 via TFTP

Use the following procedure to download software release 2.0 to ASMi-52 via the File Utilities menu.

1. Verify that the ASMI52_2.8x.img file is stored on the PC with the TFTP server application.
2. Verify that the ASMi-52 host has valid IP parameters.
3. Activate the TFTP server application.
4. Download the ASMI52_2.8x.img file from the PC to ASMi-52.

Note Configuration values shown in this chapter are examples only.

Verifying the ASMi-52 Host Parameters

The ASMi-52 host must have host IP parameters configured according to your network requirements. Otherwise you will not be able to establish a proper communication session with the TFTP server. Refer to the following manual section for additional information:

- [Connecting to the ASCII Terminal](#) in Chapter 2
- [Working with Terminal](#) in Chapter 3
- [Configuring IP Host Parameters](#) and [Configuring the Host Encapsulation](#) in Chapter 4.

► **To verify the ASMi-52 host parameters:**

- Display the Host IP menu (Configuration > System Configuration > Management > Host IP), and verify that the host IP address, IP mask and default gateway are configured according to your network requirements.

```

ASMi-52
Host IP
Host IP address          (172.17.161.73)
Host IP mask             (255.255.255.0)
Host default gateway     (172.17.161.1)
Read community           (public)
Write community          (public)
Trap community           (public)

>

ESC-prev. menu; !-main menu; &-exit; @-scroll

```

Figure 6-2. Configuring the Host

5. Display the VLAN Encapsulation menu (Configuration > System Configuration > Management > VLAN Encapsulation), and verify that the host encapsulation parameters are configured according to your network requirements.

```

ASMi-52
VLAN Encapsulation
1. Host Tagging          (UNTAGGED)
2. VLAN management ID [1 - 4094] (1)
3. VLAN priority (0-7)   (0)

>

ESC-prev. menu; !-main menu; &-exit; @-scroll

```

Figure 6-3. Verifying Host Encapsulation Settings

Activating the TFTP Server

Once the TFTP server is activated on the PC, it waits for any TFTP file transfer request originating from the product, and carries out the received request automatically. *Transferring Software and Configuration Files* section in Chapter 4 explains how to prepare your PC for the TFTP file transfer.

► To run the TFTP server:

- Activate a TFTP server application, such as **3Cdaemon** (available from www.3com.com) or **PumpKIN** (available from <http://kin.klever.net/pumpkin/>).

Downloading the New Software Release File to ASMi-52

ASMi-52 stores two software versions, each of them in one of the two 512-byte partitions of its flash memory, which also contains a boot program. The software is stored in compressed format. The active version is decompressed and loaded into the ASMi-52 RAM upon power-up. The passive software is kept for backup purposes. By default, ASMi-52 is delivered with the active software only.

New software releases are distributed as an ***.img** file, which is downloaded to the local ASMi-52 using the TFTP or XMODEM protocol. Upon downloading, the new software release becomes active, the former active software turns into backup, and the former backup is erased.

If a failure occurs during downloading or decompression, the new version is erased from the flash and the backup version becomes active. In this case, only one version is left stored in the flash memory. If the active software becomes corrupted, you can replace it with its backup.

This procedure is used to replace the current software version with the new software release (ASMi52_2.8x.img).

Installing a New Software Release via TFTP

► To download the new software release file via TFTP:

1. From the SW & File Transfer menu, select **TFTP** (*Figure 6-4*) (Main menu > File Utilities > SW & File Transfer > SW Download > TFTP).

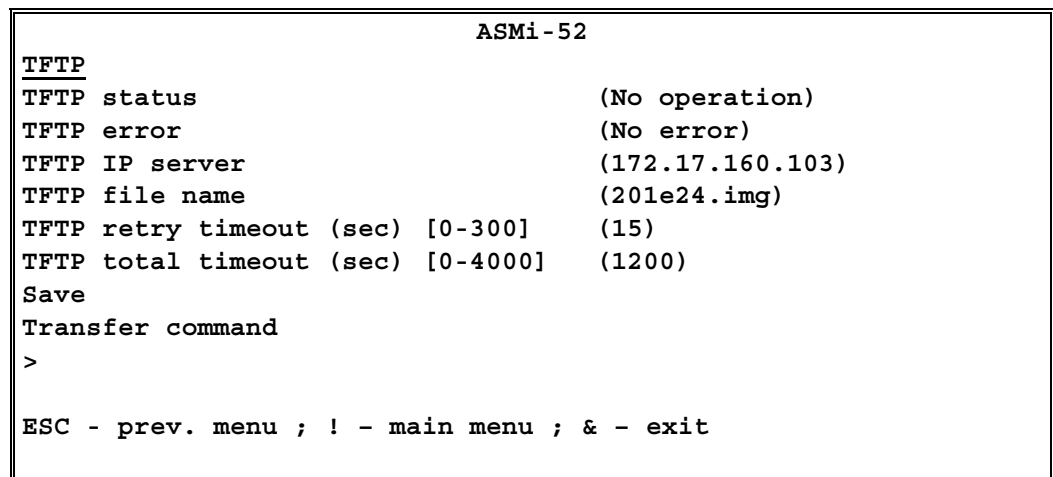


Figure 6-4. TFTP Menu

2. From the TFTP menu, perform the following steps:
 - Select **TFTP IP Server** and enter the IP address of the TFTP server
 - Select **TFTP File Name** and enter the name of the software file (for example, **201e24.img**).
 - Select **TFTP Retry Timeout** and specify intervals between connection retries (in seconds).
 - Select **TFTP Total Timeout** and specify the TFTP connection timeout (in seconds).
 - Select **Save** to save the TFTP configuration.
 - Select **Transfer Command** to start downloading file to ASMi-52.

ASMi-52 automatically erases the backup partition. Once downloading is completed, ASMi-52 saves the new release as an active partition, the former active partition becomes the backup.

Once downloading is complete, ASMi-52 decompresses the release file, displaying the following message:

Final process download. Reset

After the decompression, ASMi-52 saves the new release as an active partition, the former active partition becomes backup. Then the unit

resets itself. This causes the new software to be loaded into the modem's RAM.

Installing a New Software Release via XMODEM

Notes

- *Installation of the new software releases via XMODEM is not possible over Telnet.*
- *To minimize the software downloading time, it is recommended to configure the CONTROL port to the highest available data rate.*

► To install a new software release via XMODEM:

1. From the SW & File Transfer menu, select **XMODEM** (Main menu > File Utilities > SW & File Transfer > SW Download > XMODEM).

ASMi-52 responds with the following string:

PLEASE OPEN XMODEM APPLICATION.

For exit press Q(uit)

If you press <Q>, ASMi-52 aborts the download process and displays **Download failure. Press Esc to continue.** message in addition to the previous display.

Note

During the software installation, the TST indicator blinks.

2. Send the *.img file to ASMi-52 using the XMODEM protocol of your terminal application.

Once downloading is complete, ASMi-52 decompresses the release file, displaying the following message:

Final process download. Reset device after 5 seconds

After the decompression, ASMi-52 is automatically reset. This causes the new software to be loaded into the modem's RAM.

6.6 Upgrading ASMi-52 Software via the Boot Menu

Software downloading may also be performed using the Boot menu. The Boot menu can be reached while ASMi-52 performs initialization, for example, after power-up.

You may need to start the loading from the Boot menu when it is not possible to activate TFTP from the Download/upload using TFTP menu (for example, because the ASMi-52 software has not yet been downloaded or is corrupted).

Caution

The Boot menu procedures are recommended only for use by authorized personnel, because this menu provides many additional options that are intended for use only by technical support personnel.

Two software downloading options are available from the Boot menu:

- Downloading using the XMODEM protocol. This is usually performed by downloading from a PC directly connected to the CONTROL port of the unit.

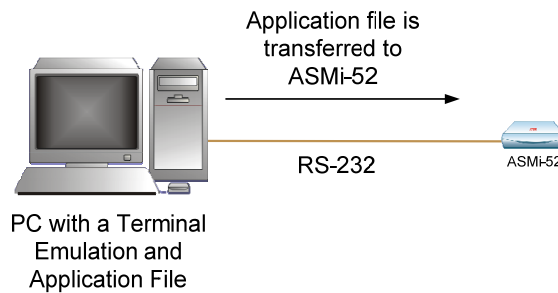


Figure 6-5. Downloading a Software Application File to ASMi-52 via XMODEM

- Downloading using the TFTP. This is usually performed by downloading from a remote location that provides an IP communication path to an Ethernet port of ASMi-52.

Using the XMODEM Protocol

Use the following procedure to download software release 2.8 to ASMi-52 via XMODEM.

1. Verify that the *.img file is stored on the PC with the terminal application.
2. Configure the communication parameters of the selected PC serial port for asynchronous communication for 115.2 kbps, no parity, one start bit, eight data bits and one stop bit. Turn all types of flow control off.
3. Turn off ASMi-52.
4. Activate the terminal application.
5. Turn on ASMi-52 and immediately start pressing the **<Enter>** key several times in sequence until you see the Boot screen. A typical screen is shown below (the exact version and date displayed by your ASMi-52 may be different).

Note *If you miss the timing, ASMi-52 performs a regular reboot process (this process starts with **Loading** and ends with a message to press **<Enter>** a few times to display the log in screen).*

```

RAD ASMI_52 Boot Version 1.00 (Nov 9 2004)
RAD Boot Manager Version 7.01 (Nov 9 2004)

0 - Exit Boot-Manager
1 - Dir
2 - Set Active Software Copy
3 - Delete Software Copy
4 - Download Files or an Application by XMODEM
5 - Format flash
6 - Show basic hardware information
7 - Reset board
8 - System Configuration.
9 - Download an Application by TFTP
Press the ESC key to go back to the Main Menu.
Select:

```

Figure 6-6. Boot Manager Menu

► To download software release via XMODEM:

1. From the Boot menu, select **Download an Application by XMODEM**. You will see a message that requests the partition number to which the new software is to be downloaded, and offers a recommended value.
2. If there is no special reason to select a different value, type the recommended number and then press <Enter>. A typical display is shown below:

```

Select Copy number for download ( 1 )
Select: 1

```

3. The process starts, and you will see:

```

Erasing Partition please wait ....
Please start the XMODEM download.

```

4. Start the transfer in accordance with the program you are using. For example, if you are using the Windows HyperTerminal utility:
 - Select **Transfer** in the HyperTerminal menu bar, and then select **Send File** on the **Transfer** menu.

The **Send File** window is displayed:

 - Select the prescribed ASMi-52 software file name (you may use the **Browse** function to find it).
 - In the **Protocol** field, select **Xmodem**.
 - When ready, press **Send** in the **Send File** window. You can now monitor the progress of the downloading in the **Send File** window.

Note *If downloading fails, repeat the whole procedure.*

6. When the downloading process is successfully completed, you will see a sequence of messages similar to the following:

```

Loading ...
Decompressing to RAM.

Processing archive: FLASH
Extracting ASMI52.BIN
..... CRC OK
Running ...
*****
* In order to start working - press the ENTER button for few times*
*****

```

7. At this stage, press the <Enter> key several times to go to the log in screen.

Using the TFTP

Use the following procedure to download software release 2.8 to ASMi-52 via TFTP.

1. Verify that the *.img file is stored on the PC with the TFTP server application.
2. Define IP parameters via the Boot Manager menu.
3. Activate the TFTP server application.
4. Download the *.img file from the PC to ASMi-52.

► To define IP parameters via the Boot Manager menu:

1. From the Boot menu (*Figure 6-6*), select **System Configuration** to start the configuration of the ASMi-52 IP communication parameters, as needed for TFTP transfer.

The parameters are displayed in consecutive lines. For each parameter, you can accept the current values by simply pressing <Enter> to continue, or type a new value:

- **IP Address:** used to select the IP address of ASMi-52. To change the current value, type the desired IP address in the dotted quad format, and then <Enter> to continue.
- **IP Mask:** used to select the IP subnet mask of ASMi-52. To change the current value, type the IP subnet mask address in the dotted quad format, and then <Enter> to continue.
- **Default Gateway Address:** when the TFTP server is located on a different LAN, you must define the IP address of the default gateway to be used by ASMi-52. Make sure to select an IP address within the subnet of the assigned ASMi-52 IP address. To change the current value, type the desired IP address in the dotted quad format, and then <Enter> to end the configuration.

If no default gateway is needed, for example, because the TFTP server is attached to the same LAN as ASMi-52 being loaded, enter **0.0.0.0**.

2. Press **<Enter>** to display the Boot menu.
3. Select **Perform Reset to the board** to reset ASMi-52. The new parameters take effect only after the resetting is completed.

➤ **To download software from the Boot menu using TFTP:**

1. From the Boot menu, select **Download an Application by TFTP** and then press **<Enter>** to start the TFTP transfer.

Please Enter the Target File Name message is displayed.

2. Enter the name of the desired software distribution file (make sure to include the path, when necessary). When done, press **<Enter>** to continue.

Please Enter the Server IP address message is displayed.

3. Enter the IP address of the server on which the software distribution file resides and then **<Enter>** to continue.

If no errors are detected, the downloading process starts, and the screen displays its relative progress.

4. After the transfer is successfully completed, return to the Boot menu and select **Exit Boot-Manager**.

When the ASMi-52 initialization is ended, the unit loads the new software.

Note *If downloading failed, repeat the whole procedure.*

Chapter 7

Application Tutorial

This chapter describes how to build a typical application using an LRS-16 and ASMi-52 units. *Figure 7-1* illustrates a typical application using an ASMi-52 unit with LRS-16 on the central site.

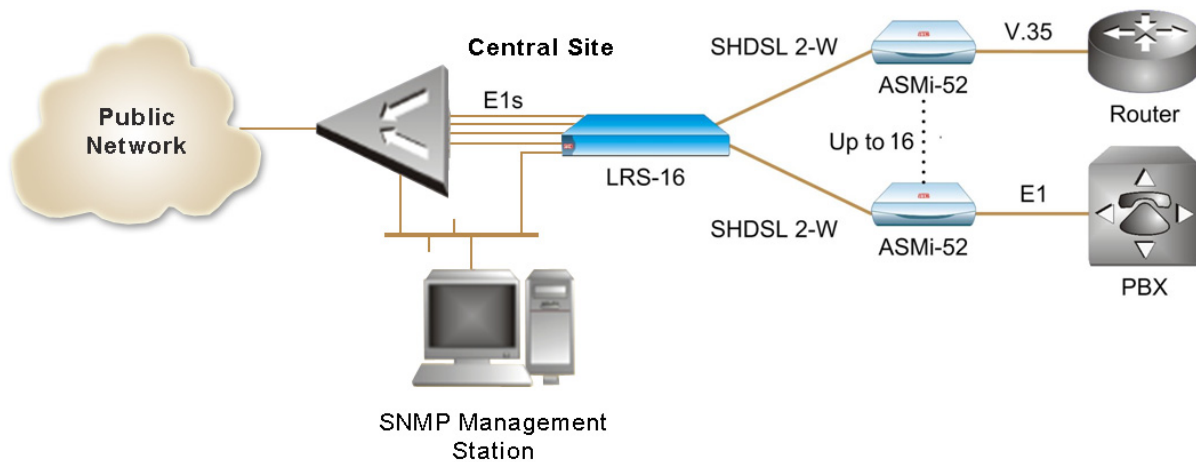


Figure 7-1. One LRS-16 Unit Performing Backbone Data Transmission to ASMi-52 Modems on the Customer Premises

The following sections describe how to connect the equipment, configure the application and run diagnostic tests.

7.1 Equipment List

The following devices are used in the application:

- An LRS-16 unit
- Two ASMi-52 devices
- A PC
- One straight Ethernet copper cable with RJ-45 connectors
- Two straight E1 cables
- One straight E1 cable split in two RJ-45 connectors in one side
- One supervisory terminal copper cable with DB-9 connectors
- One copper cable with 15-pin female DB-15 EXT CLK connectors.

Installing LRS-16

Before starting configuration, install the unit as follows:

1. Connect the LAN to the MNG-ETH port of the LRS-16 device using straight Ethernet cable with RJ-45 connector.

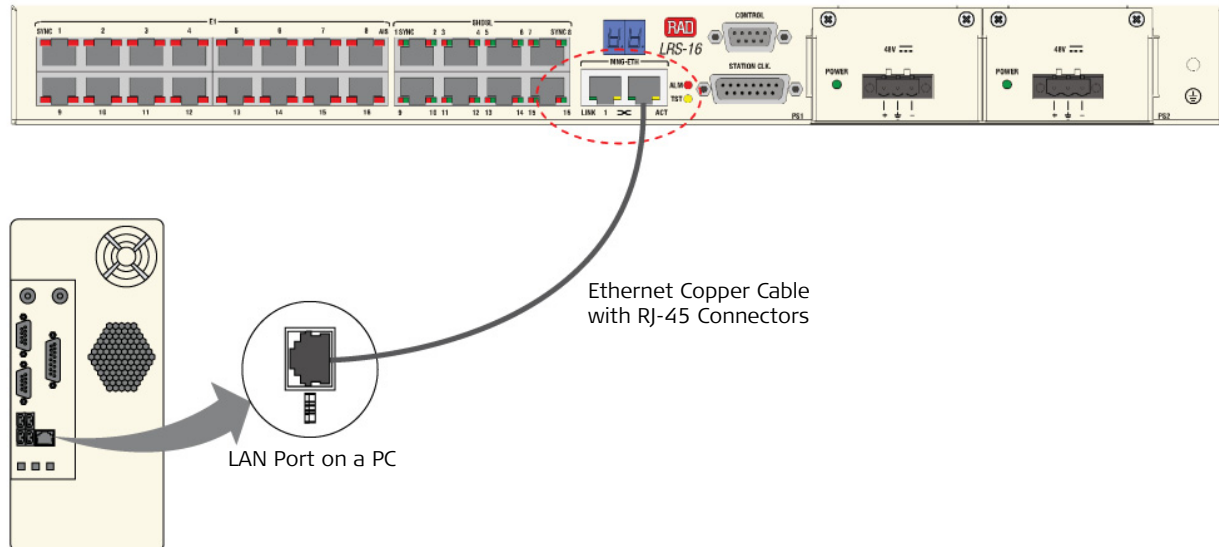


Figure 7-2. Connecting MNG-ETH to Computer

2. Connect the E1 provider to the E1 port of the LRS-16 device using straight E1 cable with RJ-45 connector.

Note Unbalanced E1 interface is provided via CBL-RJ45/2BNC/E1 adaptor cable.

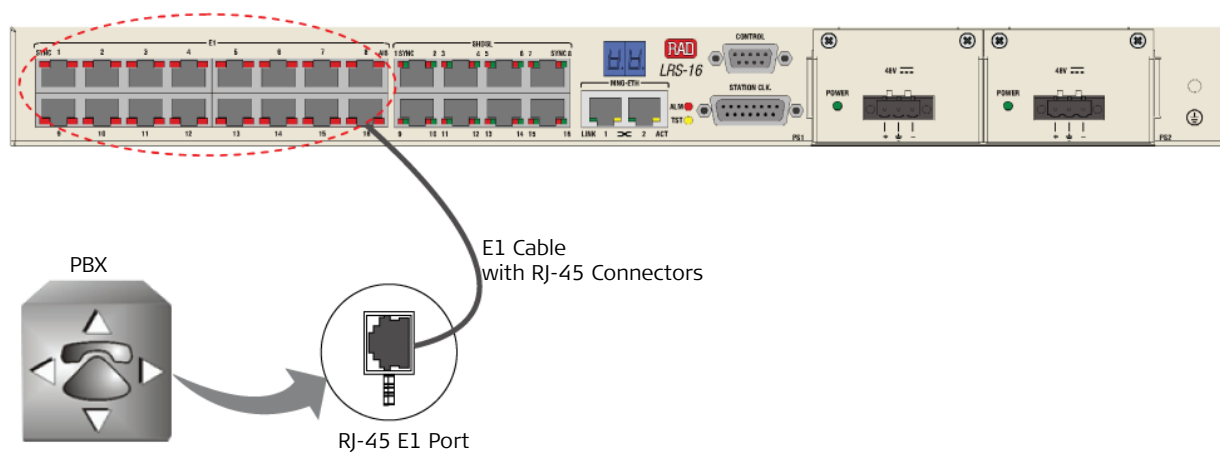


Figure 7-3. Connecting E1 to E1 Provider (PBX)

3. Connect two ASMi-52 devices to the SHDSL two-wire ports of the LRS-16 using split E1 cable with RJ-45 connectors.

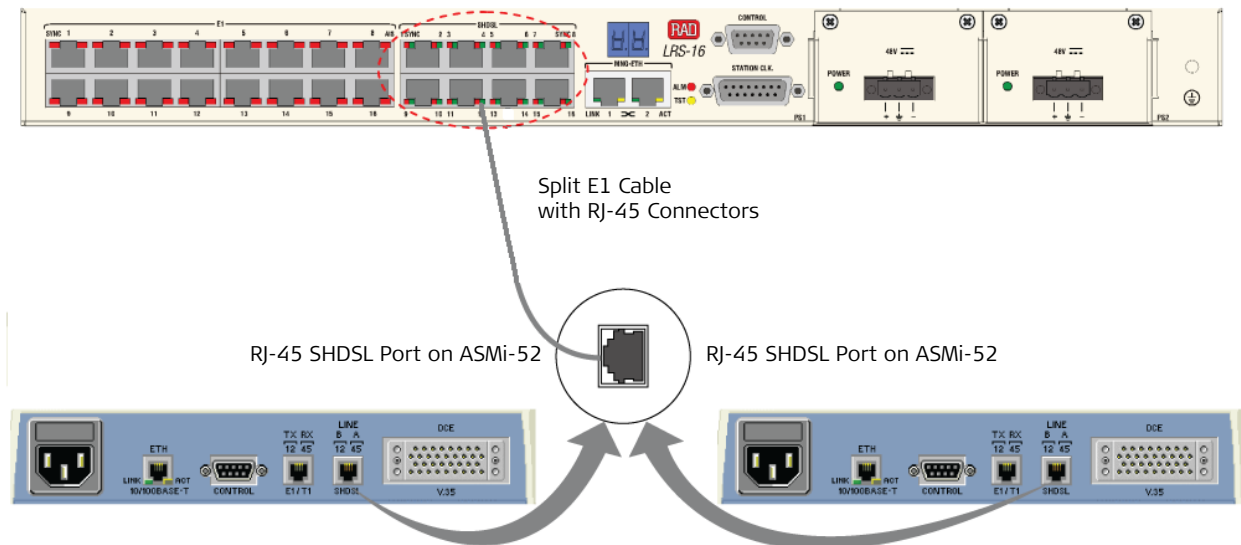


Figure 7-4. Connecting SHDSL to ASMi-52

4. Connect a supervisory terminal to the CONTROL port of the LRS-16 device using straight copper RS-232/V.24 cable with DB-9 male connector.

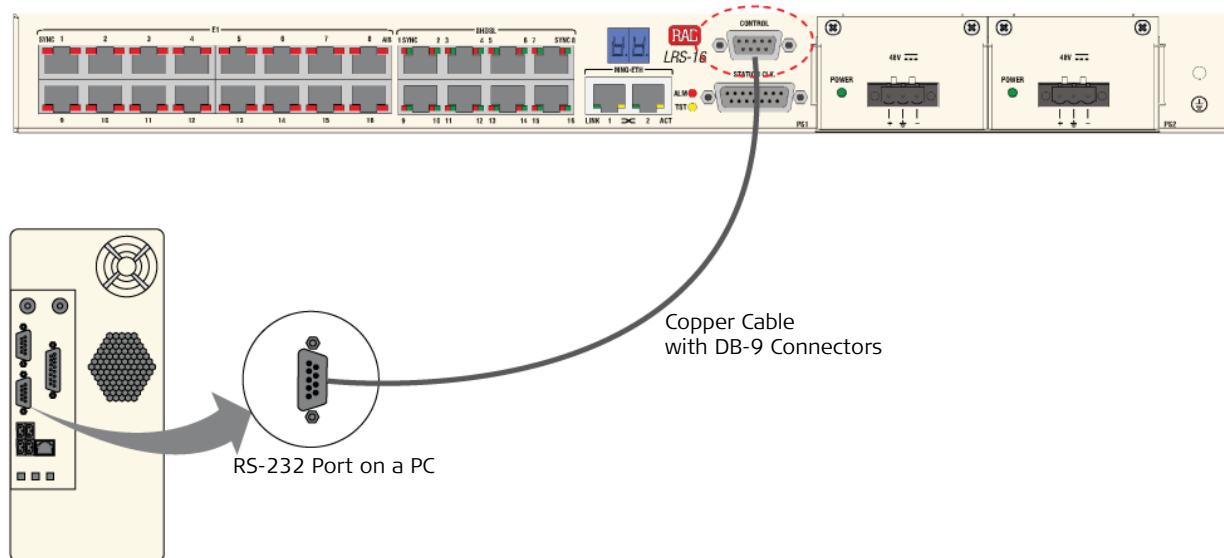


Figure 7-5. Connecting CONTROL to Computer

5. Connect the external (station) E1 clock source to the STATION CLK port of the LRS-16 device using a straight DB-15 cable with DB-15 EXT CLK male connectors.

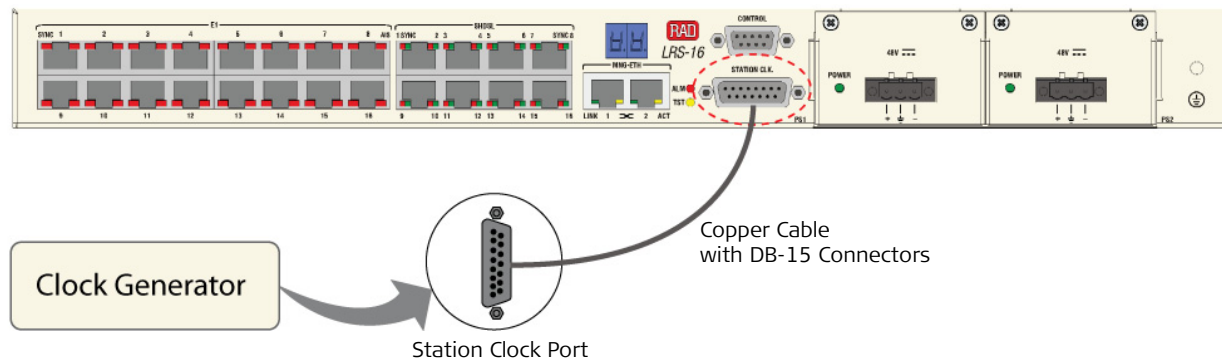


Figure 7-6. Connecting STATION CLK to Clock Generator

6. Power up the LRS-16 unit. Verify that the PS1 and/or PS2 LEDs in the front panel are lit.
7. Verify LRS-16 correct startup by observing the state if the PS LED(s) are as follows:
 - On (Green) – power supply is on
 - On (Red) – power supply is not connected to the mains
 - Off – power supply is off.

Configuring the Local LRS-16

This section explains how to configure LRS-16. When the process is completed, the configuration file is transferred to the LRS-16 unit.

Refer to [Chapter 3](#) for explanation of how to select management options and save the changes.

Accessing LRS-16

Usually, initial configuration of the management parameters is performed via an ASCII terminal or a network management station (NMS). Once the LRS-16 host IP parameters are set, it is possible to access it via Telnet, ConfiguRAD, or RADview (a network management station – NMS) for operation configuration.

► To access LRS-16:

1. Connect your PC to the LRS-16 CONTROL port.
2. Set your terminal emulator with the following parameters:
 - Baud rate – 9,600
 - Data bits: – 8
 - Stop bits – 1
 - Parity – None
 - Flow control – None
3. Set the terminal emulator to VT100 emulation for optimal view of system menus. If you are using HyperTerminal, set the terminal mode to 132-column

mode for optimal view of system menus (**Properties > Settings > Terminal Setup > 132 column mode**).

LRS-16	
USER NAME:	
PASSWORD	
ESC-Clear; &-Exit	1M/ 1C

➤ To enter as a superuser:

1. Enter **su** for user name.
2. Enter **1234** for password.

The Main menu appears:

LRS-16	
<u>Main Menu</u>	
1. Inventory	>
2. Configuration	>
3. Monitoring	>
4. Diagnostics	>
5. Utilities	>
>	
Please select item <1 to 5>	
ESC-Previous menu; !-Main menu; &-Exit	1M/ 1C

Figure 7-7. LRS-16 Main Menu

Configuring the Host IP

In order to manage the device remotely (via Telnet or Web), you must configure the host IP.

➤ To configure LRS-16 host IP:

1. From Main menu, select **Configuration > System > Management > Host**.

The Host screen appears.

LRS-16	
<u>Configuration>System>Management>Host</u>	
1. IP Address	... (0.0.0.0)
2. Mask	... (255.255.255.0)
3. Default gateway	... (0.0.0.0)
4. Read community	... (public)
5. Write community	... (private)
6. Trap community	... (public)
>	
ESC-Previous menu; !-Main menu; &-Exit	
1M/ 1C	

Figure 7-8. Host Screen

2. Enter the following parameters (for example):

- IP address – 172.17.152.131
- IP mask – 255.255.255.0
- Default gateway – 172.17.152.1

3. Press <S> to save the parameters.

The changes are saved in the unit.

Configuring the Network Managers

The network management stations to which the SNMP agent sends traps can be defined or modified. Up to ten managers can be defined. Entering the IP address and corresponding subnet mask defines each management station. In addition, you can temporarily prevent a manager station from receiving traps by masking the network manager.

► To edit the manager list:

1. Select **Main Menu > Configuration > System > Management > Managers list**.

The Management List screen appears.

LRS-16		
<u>Configuration>System>Management>Managers list</u>		
Manager ID	Manager IP	Manager Trap Mask
1.	10.1.1.2	Unmask
2.	9.2.3.4	Unmask
3.	0.0.0.0	Unmask
4.	0.0.0.0	Unmask
5.	0.0.0.0	Unmask
6.	0.0.0.0	Unmask
7.	0.0.0.0	Unmask
8.	0.0.0.0	Unmask
9.	0.0.0.0	Unmask
10.	0.0.0.0	Unmask
1. Change cell ... (10.1.1.2)		
>		
ESC-Previous menu; !-Main menu; &-Exit; ?-Help		1M/ 1C

Figure 7-9. Manager List Screen

2. Move the cursor to the **Manager IP** cell you wish to modify by pressing the **Up** and **Down** arrow keys and press <1>.
3. Enter a new IP address for the selected network manager.
4. Move the cursor to the **Manager Trap Mask** field and press <1> to toggle between **Mask** and **Unmask** to mask or unmask traps for the selected management station.

The default is **Unmask**.

After editing the manager list, the changes are saved automatically.

Setting Management Access

- To set Telnet, SNMP, or WEB access permissions for a user:
 1. Select **Main Menu> Configuration> System> Management> Management Access**.

The Management Access screen appears.

LRS-16	
<u>Configuration>System>Management>Management Access</u>	
1. User Access	>
2. Telnet	> (Enable)
3. SNMP Access	> (Enable)
4. WEB Access	> (Enable)
>	
ESC-Previous menu; !-Main menu; &-Exit	
1M/ 1C	

Figure 7-10. Management Access Screen

2. Select the access level you wish to set: **Telnet**, **SNMP Access**, or **WEB Access**.
3. Select the permission setting for this access level as **Enable**.
4. Press **<S>** to save the changes.

The changes are saved in the unit.

Configuring Terminal Parameters

The terminal is connected to the control port. The management software allows you to configure the terminal baud rate.

Note

The Baud Rate parameter is masked during a Telnet session.

► To change the terminal baud rate:

1. Select **Main Menu > Configuration > System > Terminal**.

The Terminal screen appears.

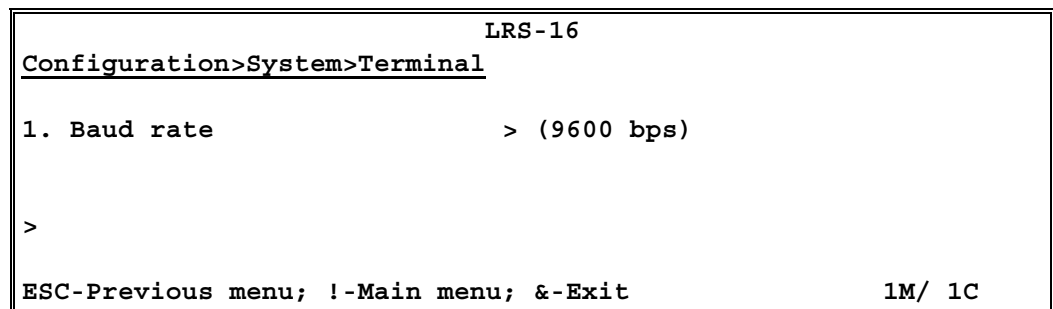


Figure 7-11. Terminal Screen

2. Select **Baud rate**.

The Baud Rate screen appears.

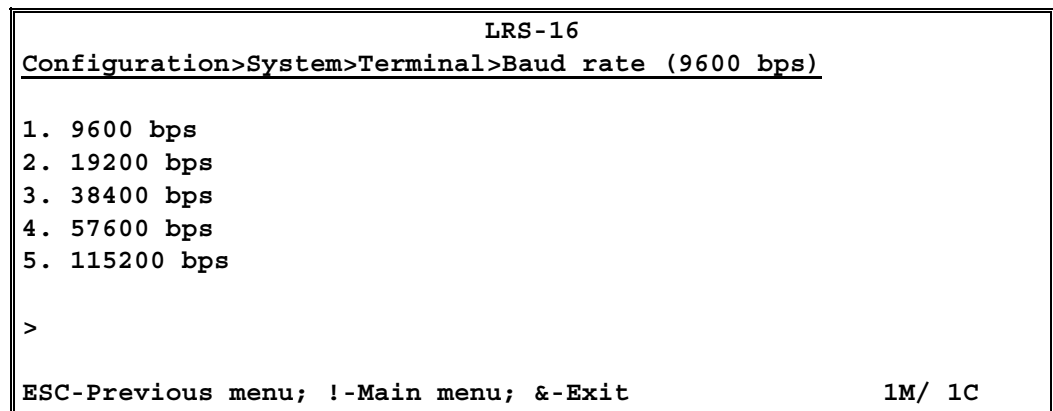


Figure 7-12. Baud Rate Screen

3. Select the desired baud rate (9600, 19200, 38400, 57600, or 115200).

The default baud rate is **9600**.

4. Return to the **Terminal** screen and press **<S>** to save the changes.

The changes are saved in the unit.

Setting Date and Time

The Date and Time screen is used to configure the NTP client parameters.

➤ To configure the NTP client parameters:

1. Select **Main Menu > Configuration > System > Date and Time**.

The Date and Time screen appears. Set the parameters as prompted in the screen.

2. Press <S> to save the changes.

LRS-16	
<u>Configuration>System>Date and Time</u>	
1. Date	... (2000-01-01)
2. Time	... (00:00:00)
>	
ESC-Previous menu; !-Main menu; &-Exit	
1M/ 1C	

Figure 7-13. Date and Time Screen

Configuring Physical Layer Parameters

LRS-16 has 16 SHDSL interfaces and 16 E1 interfaces. The SHDSL and E1 configuration menus are accessed from the **Physical Layer** menu.

Configuring the E1 Port

➤ To configure the E1 port:

1. Navigate to **Main Menu > Configuration > Physical Layer > E1 Port**.

The E1 configuration screen appears ([Figure 7-14](#)).

2. Set the Administrative Status to **Up** to activate the E1 port.
3. Set the other parameters required by your system if needed.
4. Press <S> to save the changes.

```

LRS-16
Configuration>Physical Layer>E1
1. E1 Link Number[1 - 16]    ... (1)
2. Administrative Status      (Up)
3. User Name                  ... (E1-1)
4. Interface Type             (Balanced)
5. Link Type                  > (G.732N)
6. Idle Code[0 - ff]         ... (7C)
7. Transmit Clock            > (Internal)
8. TS0 Mode                   (Transparent)
9. Mask Link alarms           (Disable)
10. Rem_CH1_TS_NUM[0 - 32]    ... (0)
11. TS Assignment             >
>

f-Forward; b-Backward
ESC-Previous menu; !-Main menu; &-Exit          1 M/ 1 C

```

Figure 7-14. E1 Configuration Screen

Configuring the the SHDSL Link

➤ To configure the SHDSL link:

1. Navigate to **Main Menu > Configuration > Physical Layer > SHDSL**.

The SHDSL Link Configuration screen appears.

2. Set the Administrative Status to **Up** to activate the SHDSL port.
3. Press **<S>** to save the changes.

```

LRS-16
Configuration>Physical Layer>SHDSL
1. Line Number[1-16]          ... (1)
2. Administrative Status      (Up)
3. STU                        (Central)
4. Power Backoff[0 - 31]      ... (0)
5. Transmission Mode          (Annex B)
6. Loop Attenuation Threshold (dB) [0 - 127] ... (0)
7. SNR Margin Threshold (dB) [0 - 15]    ... (0)
8. Reset line
9. Mask line alarms           ()
10. SHDSL Remote              >
11. Open Virtual Terminal Session
>

f-Forward; b-Backward
ESC-Previous menu; !-Main menu; &-Exit          1 M/ 1 C

```

Figure 7-15. SHDSL Link Configuration Screen

Configuring the Station Clock

Transmitted data can be clocked either from an internal clock within the LRS-16, or from an external clock via the SHDSL or E1 links.

➤ **To configure the clock source:**

1. Navigate to **Main Menu > Configuration > Physical Layer > Station Clock**.

The Station Clock screen appears.

2. Set **Rx Input Signal** as **G.703 (E1)**.
3. Set **Tx Clock** as **Enable**.
4. Set **Mask Station Link Alarms** as **Enable** (optionally).
5. Press <S> to save the changes.

LRS-16	
<u>Configuration>Physical Layer>Station Clock</u>	
1. Rx Input Signal	(G703)
2. Tx Clock	(Disable)
>	
f-Forward; b-Backward	
ESC-Previous menu; !-Main menu; &-Exit	
1 M/ 1 C	

Figure 7-16. Station Clock Screen

Saving the Configuration File

Configuration files can be uploaded for storage and backup. We must save the file containing all configured parameters of the LRS-16 on a PC.

Management software allows file transfer via TFTP only.

➤ **To save the configuration file:**

1. Activate the TFTP server on your PC (for more information on setting up a TFTP server, see [Chapter 4](#)).
2. From the **Main Menu > Utilities > File Transfer > TFTP**, set the following (for example):
 - Server IP Address – **172.17.152.46**
 - Remote File Name – **Remote_LRS_16.cfg**
 - File Type – **Configuration**.
3. Press <S> to save the changes.
4. Select **Command > Upload** to start uploading the configuration file to a remote server.

LRS-16 starts file transfer.

```

LRS-16
Utilities>File Transfer>TFTP

1. Server IP Address  ... (172.17.152.46)
2. Remote File Name   ... (Remote_LRS_16.cfg)
3. File Type          (Configuration)
4. Command            >

>

ESC-Previous menu; !-Main menu; &-Exit                      1 M/ 1 C

```

Figure 7-17. TFTP Screen

The TFTP file transfer process is logged with the following system messages (see [Chapter 6](#)):

- TFTP – Starting Upload
- TFTP – Upload Failed.

Running Diagnostic Tests

LRS-16 checks network integrity by running a number of local and remote tests.

```

LRS-16

Diagnostics

1. Local tests      >
2. Remote tests     >

>

ESC-prev.menu; !-Main menu; &-Exit                      1 M/ 1 C

```

Figure 7-18. Diagnostics Screen

LRS-16 supports the local and remote loopbacks as per ITU V.54, initiated from the supervisory terminal. All loopbacks start in the immediate vicinity to the link and then proceed to the inner part of the unit. You can define loopback direction (Local or Remote).

Running Local Loopback Tests

The local loopback tests (LLB and LLB-DTE) check the performance and data connectivity of the local LRS-16 E1 link, the network site, and the connection between them. The LLB can be performed separately on the local and remote modems.

Note

Timeout set to 0 (zero) is endless. Avoid setting timeout to 0 as the local control is lost during LLB.

Note

After finishing loop timeout, the screen cannot be refreshed automatically.

► **To run the local loopback test:**

1. Access the local LRS-16.
2. From the Main menu, select **Diagnostics > Local tests**.

The Local Tests screen appears.

```

LRS-16

Diagnostics>Local tests

1. Link Number[1 - 16]          ... (1)
2. Test type                    >  (Disable)
3. Test time out[0 - 4096]      ... (0)
4. Bert Pattern                 >  (2E-15)

>

f-Forward; b-Backward
ESC-prev.menu; !-Main menu; &-Exit          1 M/ 1 C

```

Figure 7-19. Local Tests Screen

3. Select the Link (port) number.
4. Set the Test Type as one of the following:
 - LLB - A loop towards the E1 link of LRS-16 (in E1 framer of LRS-16)
 - DTE-LLB - A loop towards the E1 link of LRS-16 (in FPGA of LRS-16)
 - RLB - A loop towards the E1 link of LRS-16 (in E1 framer of ASMi-52)
 - LINE-RLB - A loop towards the E1 link of LRS-16 (in FPGA of ASMi-52)
 - BERT - BERT loop towards the SHDSL link
 - BERT+RLB - BERT loop towards the SHDSL link + RLB loop request on remote unit.
5. Set the **Loopback Timeout** to **1000 seconds**.
6. Set a BERT test pattern that you intend to perform (**2E-15** or **Alternate** towards the SHDSL link), and press <S> to save the changes.
7. After finishing the tests, select **Test Type > Disable** to disable all loopbacks.
8. Press <S> to save the changes.

Running Remote Loopback Tests

The remote loopback (RLB) checks the performance of both the local LRS-16 and remote ASMi-52 modems, and the lines connecting them

LRS-16 allows you to set the loopback timeout causing the RLB to deactivate automatically after the required period of time.

► **To run the local loopback test:**

1. Access the local LRS-16.
2. From the Main menu, select **Diagnostics > Remote tests**.

The Remote Tests screen appears.

```

                                LRS-16
Diagnostics>Remote test

1. Link Number[1 - 16]          ... (1)
2. Test type                    >  (Disable)
3. Test time out[0 - 4095]      ... (0)

>

ESC-prev.menu; !-Main menu; &-Exit                      1 M/ 1 C

```

Figure 7-20. Remote Test Screen

3. Select the Link (port) number.
4. Set the Test Type as one of the following:
 - LLB - A loop towards the E1 link of ASMi-52 (in FPGA of ASMi-52)
 - DTE-LLB - A loop towards the E1 link of ASMi-52 (in E1 framer of ASMi-52)
 - RLB - A loop towards the E1 link of ASMi-52 (in E1 framer of LRS-16)
 - LINE-RLB - A loop towards the E1 link of ASMi-52 (in FPGA of LRS-16).
5. Set the **Loopback Timeout** to **1000 seconds**, and press <S> to save the changes.
6. After finishing the tests, select **Test Type> Disable** to disable all loopbacks.
7. Press <S> to save the changes.

Collecting Performance Statistics

This section describes performance statistics on the system and physical levels collected by various LRS-16 counters.

Note *Physical layer statistics are not covered in this section. For more information, see [Chapter 5](#).*

The status information is available via the Monitoring menu.

Displaying Alarms

The Active Alarms and History Alarms menus show alarm and test indications.

Active alarms are the alarms and events currently occurred. History alarms are the latest alarms and events in the History buffer, including alarms currently being occurred.

For a description of alarms, refer to [Handling Alarms](#) section in [Chapter 5](#).

► To display active alarms:

- Select **Main Menu> Monitoring> Active Alarms**.

The Active Alarms screen appears (see [Figure 7-21](#)).

► To display the alarm history:

- Select **Main Menu > Monitoring > History Alarms**.

The History Alarms screen appears (see [Figure 7-22](#)).

LRS-16					
Monitoring>Active Alarms (ON)					
Alarm Num	Source	Description	Severity	Mask	
17	SHDSL-1	SYNC_LOSS	Major	M	
19	SHDSL-1	MGMT_PORT_IS_DOWN	Major	M	
27	E1-1	E1_SIGNAL_LOSS	Major		
v 35	E1-1	E1_RED_ALARM	Major		
17	SHDSL-2	SYNC_LOSS	Major		
19	SHDSL-2	MGMT_PORT_IS_DOWN	Major		
27	E1-2	E1_SIGNAL_LOSS	Major		
35	E1-2	E1_RED_ALARM	Major		
17	SHDSL-3	SYNC_LOSS	Major		
19	SHDSL-3	MGMT_PORT_IS_DOWN	Major		
27	E1-3	E1_SIGNAL_LOSS	Major		
35	E1-3	E1_RED_ALARM	Major		
35	E1-3-REM	...			
>					
r-Refresh Table					
ESC-Previous menu; !-Main menu; &-Exit				1 M/ 1 C	

Figure 7-21. Active Alarms Screen

LRS-16						
Monitoring>History Alarms			Current Time: 0:07:21 Date: 2008-01-01			
Num	Source	Description	Severity	Status	Time	Date
35	E1-4	E1_SYNC_LOSS	Major	ON	16:01:40	2008-01-01
35	E1-12	E1_SYNC_LOSS	Major	ON	16:01:39	2008-01-01
35	E1-16	E1_SYNC_LOSS	Major	ON	16:01:37	2008-01-01
v 35	E1-8	E1_SYNC_LOSS	Major	ON	16:01:36	2008-01-01
35	E1-3	E1_SYNC_LOSS	Major	ON	16:01:36	2008-01-01
35	E1-11	E1_SYNC_LOSS	Major	ON	16:01:40	2008-01-01
35	E1-15	E1_SYNC_LOSS	Major	ON	16:01:40	2008-01-01
35	E1-7	E1_SYNC_LOSS	Major	ON	16:01:40	2008-01-01
35	E1-2	E1_SYNC_LOSS	Major	Major	16:01:40	2008-01-01
35	E1-10	E1_SYNC_LOSS	Major	OFF	16:01:40	2008-01-01
35	E1-14	E1_SYNC_LOSS	Major	ON	16:01:41	2008-01-01
35	E1-6	E1_SYNC_LOSS	Major	Major	16:01:41	2008-01-01
>						
c-Clear Table; r-Refresh Table						
ESC-Previous menu; !-Main menu; &-Exit; ?-Help				1 M/ 1 C		

Figure 7-22. History Alarms Screen

Event Reporting

Traps that are the result of events that were already reported by a different trap may not be repeated. For example, LOC traps will not be sent if the physical layer trap, such as LOS, was sent and the physical layer problem still exists.

The events are layered hierarchically, for example physical layer events/traps for Loop Attenuation and SNR Margin are threshold triggered, so that an event/trap is sent only if the threshold was exceeded.

Threshold can be configured for up to 8000 events per second.

The Event Log file contents can be viewed via an ASCII control terminal or a Network Management Station (NMS).

- **To view the Event Log file via NMS:**
 - From the LRS-16 zoom application window, select **Fault > History Log**.
- **To clear the Event Log file:**
 - From the LRS-16 zoom application window, select **Fault > History Log Clear**.

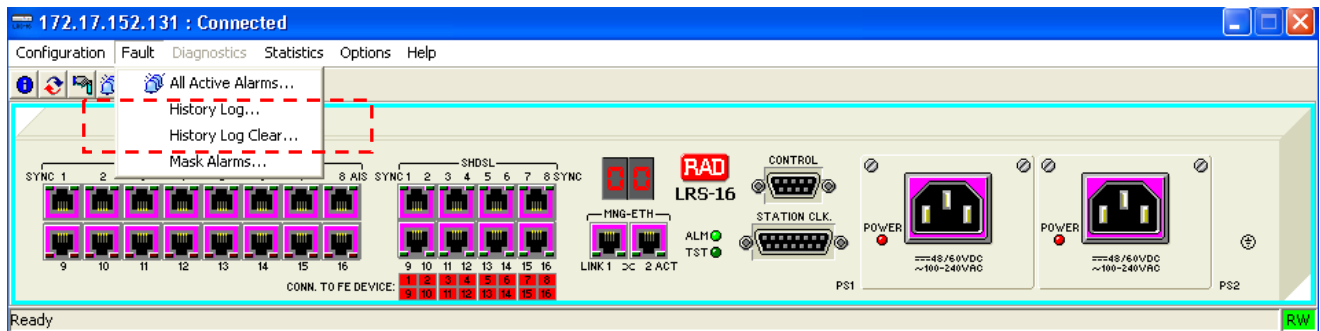


Figure 7-23. Access to the Event Log File via the Network Management Station

Appendix A

Connection Data

A.1 DTE Interface Connectors

V.35, X.21, and RS-530 Interface Connectors

The V.35 interface of the ASMi-52 modem terminates in a 34-pin female connector. The X.21 interface terminates in a 15-pin, D-type female connector. The RS-530 interface terminates in a 25-pin, D-type female connector. [Table A-1](#) lists the pin assignment of the V.35, X.21 and RS-530 interface connectors.

Table A-1. V.35, X.21 and RS-530 Connector Pinouts

Signal Function	V.35		RS-530		X.21		Description
	34-Pin		DB-25		DB-15		
	Pin	Circuit	Pin	Circuit	Pin	Circuit (Function)	
Protective Ground	A	Frame 101	1		1	---- (Shield)	Chassis Ground. It may be isolated from Signal Ground.
Signal Ground	B	Signal 102 GND	7	AB	8	---- (GND)	Common signal and DC power supply ground.
Transmitted Data	P S	TD(A) 103 TD(B) 103	2 14	BA(A) BA(B)	2 9	T(A) T(B) (Transmit)	Serial digital data from DTE. In sync applications, the data translations must occur on the rising edge of the transmit clock.
Received Data	R T	RD(A) 104 RD(B) 104	3 16	BB(A) BB(B)	4 11	R(A) R(B) (Receive)	Serial output from the modem receiver. In sync applications, the data translations occur on the rising edge of the clock.
Request to Send	C	RTS 105	4 19	CA(A) CA(B)	3 10	C(A) C(B) (Control)	A positive level to ASMi-52 when data transmission is required.
Clear to Send	D	CTS 106	5 13	CB(A) CB(B)			A positive level from ASMi-52 with delay, after receipt of Request to Send, and when ASMi-52 is ready to transmit.

Signal Function	V.35		RS-530		X.21		Description
	34-Pin		DB-25		DB-15		
	Pin	Circuit	Pin	Circuit	Pin	Circuit (Function)	
Data Set Ready	E	DSR 107	6 22	CC(A) CC(B)			A positive level from ASMi-52 when power is on, and ASMi-52 is (a) not in DIGITAL LOOP mode, or (b) has not received a REMOTE LOOPBACK signal from the remote unit.
Data Terminal Ready	H	DTR 108	20 23	CD(A) CD(B)			Not used
Carrier Detect	F	DCD 109	8 10	CF(A) CF(B)	5 12	I(A) I(B) (Indication)	A positive level from ASMi-52, except when a loss of the received signal is detected or when Data Set Ready is negative.
External Transmit Clock	U W	SCTE(A) 113 SCTE(B) 113	24 11	DA(A) DA(B)	7 14	(A) (B)	A serial data rate clock input from the data source. Positive clock translations must correspond to data transmissions.
Transmit Clock	Y a	SCT(A) 114 SCT(B) 114	15 12	DB(A) DB(B)	6 13	S(A) S(B) (Signal Timing)	A transmit data rate clock for use by an external data source. Positive clock translations correspond to data translations.
Receive Clock	V X	SCR(A) 115 SCR(B) 115	17 9	DD(A) DD(B)			A receive data rate clock output used by an external data sink. Positive clock translations correspond to data translations.
Local Analog Loop	L and j		18	LL			A control signal input, which, when on, sets ASMi-52 into Local Analog Loopback (V.54 Loop 3).
Remote Digital Loop	N and h		21	RL			A control signal input which, when on, commands ASMi-52 to send a remote Loopback command (V.54 Loop 2) to the remote ASMi-52.
Test Indicator	n and k		25	TM			A Control Signal output from ASMi-52; positive during any test mode.

E1 and T1 Interface Connector

The balanced E1 and T1 interfaces terminate in RJ-45 connector. [Table A-2](#) lists the balanced connector pin assignment.

Table A-2. E1/T1 Connector Pinout

Pin	Function
1, 2	Transmit (output)
4, 5	Receive (input)
7	CPU ID for unbalanced interface detection
8	Earth GND

Note

It is recommended to use 4-wire cables (pin numbers 1, 2, 4, and 5) only for E1/T1 connections. If 8-wire cable is used, verify that pin #7 is connected in the equipment side.

For unbalanced E1, use the cable adaptor CBL-RJ545/2BNC/E1.

Ethernet Connector

Table A-3. Ethernet Connector Pinout

Pin	Function
1	Tx+
2	Tx-
3	Rx+
4, 5	-
6	Rx-
7, 8	-

A.2 SHDSL Interface

The 4-wire SHDSL line interface of the ASMi-52 modem terminates in a RJ-45 connector wired in accordance with [Table A-4](#). The 2-wire interface has only Line A.

Table A-4. 4-Wire SHDSL Interface Pinout

Pin	Function
1	Line B
2	Line B
4	Line A

Pin	Function
5	Line A

When connecting the remote equipment to the SHDSL port, a cross-cable must be used. [Table A-5](#) provides the pinout of a typical cross-cable with two RJ-45 connectors.

Table A-5. SHDSL Cross-Cable Pinout

Local ASMi-52	Remote ASMi-52
1	2
2	1
4	5
5	4

A.3 CONTROL Connector

The control terminal interface terminates in a V.24/RS-232 9-pin D-type female connector that can be configured as DCE or DTE (see the [Selecting the Control Port Interface](#) section in Chapter 4). [Table A-6](#) lists the CONTROL connector pin assignments. [Table A-7](#) describes the control signal direction.

Table A-6. CONTROL Connector Pinout

Pin	Function
1	Data Carrier Detect (DCD)
2	Receive Data (RD)
3	Transmit Data (TD)
4	Data Terminal Ready (DTR)
5	Ground (GND)
6	Data Set Ready (DSR)
7	Request To Send (RTS)
8	Clear To Send (CTS)
9	Ring Indicator (RI)

Table A-7. CONTROL Connector Signal Direction

Control Signal	Interface Type	
	DCE	DTE
CTS	Out	Not Used
DCD	Out	Out
DSR	Out	Out
DTR	In	In
RI	Not Used	In
RTS	In	In

Note

When connected and turned on, the terminal sets the DTR line ON (active) to gain control over ASMi-52 and starts a configuration or monitoring session.

When connecting a dial-out modem to the CONTROL port for the alarm reporting, a cross cable must be used. [Table A-8](#) provides the pinout of a typical cross-cable with two male DB-9 connectors.

Table A-8. Cross-Cable Pinout

DB-9 Pin	DB-9 Pin
2	3
3	2
4	6
5	5
6	4
7	8
8	7

A.4 Alarm Relay Connector

The ASMi-52 alarm relay terminates in a 6-pin female connector, designated ALARM. [Figure A-1](#) lists the pinout of the ALARM connector. [Figure A-2](#) shows the pin functions. The relay positions are shown in the Alarm Active state.

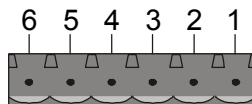


Figure A-1. ALARM Connector Pinout

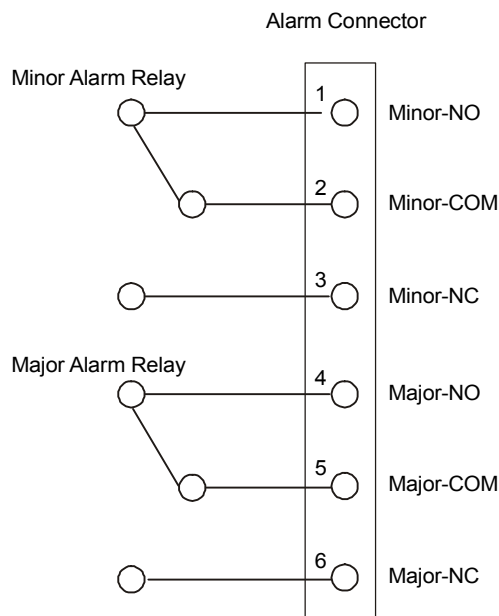


Figure A-2. ALARM Pin Functions

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